4.0 CHULA VISTA SUBAREA PLAN COVERED SPECIES

The MSCP Subregional Plan provides an analysis for all 85 species covered under the Subregional Plan. Table 3-5 of the Subregional Plan includes a summary of the species coverage analysis, and specifies levels of conservation for the MSCP planning area as a whole (Appendix A).

Table 3-5 of the MSCP Subregional Plan includes important information regarding the regional distribution and conservation levels for the 85 MSCP species. In addition, specific conditions for coverage are provided in the species discussions in Table 3-5 of the Subregional Plan. All specific conditions for coverage from Table 3-5 of the MSCP Subregional Plan are incorporated into this Subarea Plan.

This Subarea Plan, in concert with the MSCP Subregional Plan and the other implementing Subarea Plans, provides for conservation of all 85 Covered Species plus the QCB, for a total of 86 Covered Species, within the *Chula Vista Subarea* (the Chula Vista Covered Species). The Chula Vista Covered Species are identified on Tables 4-1, 4-2 and 4-3. This Subarea Plan contributes to conservation for many of these species, and in some cases, provides conservation of key populations and/or habitats for a subgroup of the 86 species. On the other hand, some species covered under the Subregional Plan are not expected to occur within the *Chula Vista Subarea*, due to lack of suitable habitat or range restrictions of the various species.

This section is divided into four subsections. Section 4.1 contains a discussion of conservation and management proposed for Covered Species that are known to occur within the *Chula Vista Subarea* and for which Preserve design and management considerations within the City substantially contribute to subregional conservation of the Covered Species. These Covered Species are defined as Species Adequately Conserved and are those species for which the City shall receive Take Authorization regardless of the participation or continued participation of any other Participating Local Jurisdiction. Section 4.2 contains a discussion for each of the Covered Species that have the potential to occur in the Subarea, either because there is some known occurrence data within the Subarea or there is suitable habitat within the Subarea. Section 4.3 contains a brief discussion of each Covered Species that is not anticipated to occur within the Subarea, either because of lack of suitable habitat or other considerations, for which an explanation is provided. Section 4.4 provides an analysis of coverage for the QCB, a species covered by this Subarea Plan but not covered by the MSCP Subregional Plan.

For ease of reference, Tables 4-1, 4-2 and 4-3 provide the following species information:

- A list of each grouping of species, in alphabetical order by scientific name for plants and by taxonomic subgroup for animals;
- Common name;
- If applicable, legal and/or management status (see key below);
- Page reference to species information in Table 3-5 of the MSCP Subregional Plan provided as Appendix A of this Subarea Plan.

Key to Legal and Management Status of Each Species in Tables 4-1, 4-2 and 4-3:

FE	=	Federally Endangered
PE	=	Proposed for Federal listing as Endangered
FT	=	Federally Threatened
PT	=	Proposed for Federal listing as Threatened
C	=	Candidate for Federal listing
BEPA	=	Bald Eagle Protection Act
CE	=	State Endangered
CR	=	State Rare
CT	=	State Threatened
SSC	=	State Species of Special Concern
Protected	=	Moratorium on Hunting
None	=	No Federal or State status
NE	=	Narrow Endemic Species in *Chula Vista Subarea*, see Section 5.2.3 of the Subarea Plan for more information about protection for Narrow Endemic Species
FP	=	DFG Fully Protected Species

Table 4-1: Species Adequately Conserved

Scientific Name	Common Name	Status*	MSCP Subregional Plan Table 3-5 Page Ref.
Plants			
Cordylanthus maritimus ssp. *maritimus*	Salt marsh bird's-beak	FE/CE/NE	3-41
Cordylanthus orcuttianus	Orcutt's bird's-beak		3-42
Dudleya variegata	Variegated dudleya	NE	3-44
Ferocactus viridescens	San Diego barrel cactus		3-47
Deinandra [Hemizonia] conjugens	Otay tarplant	FT/CE/NE	3-48
Opuntia parryi var. *serpentina [Opuntia californica var. californica]*	Snake cholla	NE	3-54
Invertebrates			
Euphydryas editha quino	Quino checkerspot butterfly	FE	N/A
Panoquina errans	Salt marsh skipper		3-62
Birds			
Aimophila ruficeps canescens	California rufous-crowned sparrow	SSC	3-87
Campylorhynchus brunneicapillus couesi	Coastal cactus wren	SSC	3-84
Charadrius alexandrinus nivosus	Western snowy plover	FT/SSC	3-78
Numenius americanus	Long-billed curlew	SSC	3-79
Passerculus sandwichensis beldingi	Belding's savannah sparrow	CE	3-87
Passerculus sandwichensis rostratus	Large-billed savannah sparrow	SSC	3-88
Polioptila californica californica	Coastal California gnatcatcher	FT/SSC	3-85
Rallus longirostris levipes	Light-footed clapper rail	FE/CE/FP	3-77
Speotyto cunicularia hypugaea [Athene cunicularia]	Burrowing owl	SSC	3-82
Sterna antillarum browni	California least tern	FE/CE/FP	3-81
Vireo bellii pusillus	Least Bell's vireo	FE/CE	3-86

* Key to Status abbreviations is on page 4-2

Table 4-2: Species with known occurrences or suitable habitat within the *Chula Vista Subarea*[1]

Scientific Name	Common Name	Status	MSCP Subregional Plan Table 3-5 Page Ref.
Plants			
Acanthomintha ilicifolia	San Diego thorn-mint	FT/CE/NE	3-32
Ambrosia pumila	San Diego ambrosia	FE/NE	3-33
Brodiaea orcuttii	Orcutt's brodiaea	NE	3-38
Caulanthus stenocarpus	Slender-pod jewelflower	CR	3-40
Ericameria palmeri ssp. *palmeri*	Palmer's ericameria	NE	3-45
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE/CE	3-46
Muilla clevelandii	San Diego goldenstar		3-52
Navarretia fossalis	Spreading navarretia	FT	3-52
Orcuttia californica	California Orcutt grass	FE/CE	3-54
Pogogyne nudiuscula	Otay Mesa mint	FE/CE	3-56
Satureja chandleri	San Miguel savory		3-58
Solanum tenuilobatum [taxon considered to be invalid, combined with *Solanum xanti*]	Narrow-leaved nightshade		3-59
Invertebrates			
Branchinecta sandiegonensis	San Diego fairy shrimp	FE	3-62
Streptocephalus woottoni	Riverside fairy shrimp	FE	3-63
Amphibians			
Bufo californicus	Arroyo toad	FE/SSC	3-64
Reptiles			
Clemmys marmorata pallida	Southwestern pond turtle	SSC	3-65
Cnemidophorus hyperythrus beldingi	Orange-throated whiptail	SSC	3-66
Phrynosoma coronatum blainvillei	San Diego horned lizard	SSC	3-67

[1]City of Chula Vista coverage for Incidental Take Authorization for these species is reliant upon implementation of the City and/or the County of San Diego MSCP Subarea Plans.

Table 4-2: continued

Birds			
Accipiter cooperii	Cooper's hawk	SSC	3-73
Agelaius tricolor	Tricolored blackbird	SSC	3-89
Aquila chrysaetos	Golden eagle	BEPA/SSC/FP	3-75
Branta canadensis	Canada goose		3-70
Buteo regalis	Ferruginous hawk	SSC	3-74
Buteo swainsoni	Swainson's hawk	CT	3-74
Circus cyaneus	Northern harrier	SSC	3-79
Egretta rufescens	Reddish egret		3-69
Empidonax traillii extimus	Southwestern willow flycatcher	FE/CE	3-83
Falco peregrinus anatum	American peregrine falcon	CE/FP	3-77
Haliaeetus leucocephalus	Bald eagle	FT/CE/ BEPA/FP	3-71
Pelecanus occidentalis californicus	California brown pelican	FE/CE/FP	3-68
Plegadis chihi	White-faced ibis	SSC	3-69
Sialia mexicana	Western bluebird		3-85
Sterna elegans	Elegant tern	SSC	3-80
Mammals			
Taxidea taxus	American badger	SSC	3-90
Felis concolor	Mountain lion	Protected	3-91
Odocoileus hemionus fuliginata	Southern mule deer		3-92

Table 4-3: Species not likely to be found in the *Chula Vista Subarea*[1]

Scientific Name	Common Name	Status	MSCP Subregional Plan Table 3-5 Page Ref.
Plants			
Agave shawii	Shaw's agave	NE	3-32
Aphanisma blitoides	Aphanisma		3-34
Arctostaphylos glandulosa var. *crassifolia*	Del Mar manzanita	FE	3-34
Arctostaphylos otayensis	Otay manzanita		3-35
Astragalus tener var. *titi*	Coastal dunes milk vetch	FE/CE	3-36
Baccharis vanessae	Encinitas baccharis	FT/CE/NE	3-36
Berberis nevinii	Nevin's barberry	FE/CE/NE	3-37
Brodiaea filifolia	Thread-leaved brodiaea	FT/CE/NE	3-37
Calamagrostis densa	Dense reed grass		3-38
Calochortus dunnii	Dunn's mariposa lily	CR/NE	3-39
Ceanothus cyaneus	Lakeside ceanothus	NE	3-40
Ceanothus verrucosus	Wart-stemmed ceanothus		3-41
Corethrogyne filaginifolia var. *linifolia*	Del Mar sand aster		3-43
Cupressus forbesii	Tecate cypress		3-43
Dudleya blochmaniae ssp. *brevifolia*	Short-leaved dudleya	CE/NE	3-44
Dudleya viscida	Sticky dudleya		3-45
Erysimum ammophilum	Coast wallflower		3-47
Lepechinia cardiophylla	Heart-leaved pitcher sage		3-49
Lepechinia ganderi	Gander's pitcher sage	NE	3-49
Lotus nuttallianus	Nuttall's lotus		3-50
Monardella hypoleuca ssp. *lanata*	Felt-leaved monardella	NE	3-51
Monardella linoides ssp. v*iminea*	Willowy monardella	PE/CE/NE	3-51
Nolina interrata	Dehesa bear-grass	PT/CE/NE	3-53
Pinus torreyana	Torrey pine		3-55
Pogogyne abramsii	San Diego mesa mint	FE/CE	3-55
Rosa minutifolia	Small-leaved rose	CE	3-57
Senecio ganderi	Gander's butterweed	CR	3-59
Tetracoccus dioicus	Parry's tetracoccus		3-60

[1] City of Chula Vista coverage for Incidental Take Authorization for these species is reliant upon implementation of the City and/or the County of San Diego MSCP Subarea Plans.

Table 4-3 continued

Invertebrates			
Mitoura thornei	Thorne's hairstreak butterfly		3-61
Amphibians			
Rana aurora draytoni	California red-legged frog	FT/SSC	3-65
Birds			
Charadrius montanus	Mountain plover	PT/SSC	3-79

4.1 Species That Occur in the *Chula Vista Subarea* and For Which the Subarea Plan Provides a Significant Contribution to Subregional Conservation

The following is a discussion of species conservation and management efforts related to species that are known to exist in the *Chula Vista Subarea* and for which the Subarea Plan provides a significant level of conservation. The level of conservation provided for these species in the Subarea Plan is considered to be sufficient to maintain the City's Incidental Take Authorization regardless of the status of the City and/or County of San Diego MSCP Subarea Plans. The independent coverage identified for these species, is based on the information provided below, including a description of conservation for the species; the management framework, (the mechanism(s)) put in place by the Subarea Plan or other conservation planning efforts to ensure proper management of the species; and the relevant conditions for coverage from the MSCP Subregional Plan (Appendix A).

Cordylanthus maritimus* ssp. *maritimus
Salt marsh bird's-beak
Narrow Endemic Species

Habitat and Habitat Associations

Salt Marsh habitat, particularly slightly raised hummocks, is the preferred habitat of this small annual. Also known to occupy the edge of salt pans. Tidal inundation of this area is occasional.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 100% of southern coastal salt marsh habitat within the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT ordinance. As a Narrow Endemic Species, any populations of salt marsh bird's-beak within the City will be subject to impact restrictions pursuant to Section 5.2.3 of this Subarea Plan.

Management Framework in *Chula Vista Subarea*

Management for the Sweetwater Marsh populations will be provided through the management and maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR as well as lighting and water quality controls for adjacent development are required as part of the land use controls within the Chula Vista LCP

to reduce edge effects from development outside the Preserve. Additional adjacency guidelines related to drainage, toxic substances, and invasive species are provided in Section 7.5.2 of this Subarea Plan. It should be noted that specific management for this species is entirely dependent upon federal management activities within the SDNWR, as no populations have been identified or are expected to occur outside of the SDNWR.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must: (1) include measures to reduce threats and stabilize populations (e.g., relocation of footpaths, establishment of buffer areas, etc.); (2) address opportunities for reintroduction; and (3) include measures to enhance existing populations (e.g., protect and improve upland habitat for pollinators). There is a Federal recovery plan for this species, and management activities should help achieve the specified goals. Any newly found populations shall be evaluated for inclusion in the Preserve strategy through acquisition, like exchange.

Cordylanthus orcuttianus
Orcutt's bird's-beak

Habitat and Habitat Associations

Seasonally dry drainage and upland adjacent to riparian habitat is the predominant habitat within which Orcutt's bird's-beak occurs.

Conservation in *Chula Vista Subarea*

100% of major populations in the Subarea are located in the Sweetwater Marsh NWR and the Otay River Valley.

Management Framework in *Chula Vista Subarea*

Management for the Sweetwater Marsh populations will be provided through the management and maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR, as well as lighting and water quality controls for adjacent development, are required as part of the land use controls within the Chula Vista LCP to reduce edge effects from development outside the Preserve. Additional adjacency guidelines related to drainage, toxic substances, noise, lighting, and invasive species are provided in Section 7.5 of this Subarea Plan. A management framework for the Otay River populations is provided through the Otay Ranch RMP.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

At the time permit amendments are proposed, strategies to provide protection for this species within the amendment area must be included. Take Authorization amendments are subject to public review through CEQA and NEPA processes and require approval by the Wildlife Agencies.

Dudleya variegata
Variegated dudleya
Narrow Endemic Species

Habitat and Habitat Associations

Openings in sage scrub and chaparral, isolated rocky substrates in open grasslands, and a proximity to Vernal Pools and mima mound topography characterize habitats occupied by this species. Variegated dudleya usually grows in small areas quite devoid of shrub cover even though chamise, scrub oak, or sage scrub elements may occur nearby.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 100% of major populations located in the eastern Otay River Valley. Since the 1996 Draft Subarea Plan, new populations of variegated dudleya have been identified on Bella Lago and Rolling Hills Ranch Subarea 3. Preserve design on Rolling Hills Ranch Subarea 3 will provide for conservation of 74% of the onsite population. Preserve design on Bella Lago will provide for conservation of nearly 100% of the onsite population. Because of its status as a Narrow Endemic Species, any populations of variegated dudleya within the City and outside the Development Area of Covered Projects will be subject to impact restrictions pursuant to Section 5.2.3 of this Subarea Plan and the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

The Otay Ranch RMP provides the management framework for this species in Otay Ranch and the City Planning Component Framework Management Plan in Section 7.3 of the Subarea Plan provides the management framework for this species in the City Planning Component.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include species-specific monitoring and measures to protect against detrimental edge effects to this species, including effects caused by recreational activities.

Ferocactus viridescens
San Diego barrel cactus

Habitat and Habitat Associations

The optimal habitat for this cactus appears to be Diegan sage scrub hillsides, often at the crest of slopes and growing among cobbles. It occasionally is found on the periphery of Vernal Pools and mima mound topography. This presumably more mesic habitat (Stockpen gravelly clay loams) is unlike the very xeric situations where it is typically found. This barrel cactus utilizes a number of other soil types such as San Miguel-Exchequer rocky silt loams and Redding gravelly loams.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 75% of major populations located in Salt Creek, Wolf Canyon and the Otay River Valley. Otay Ranch RMP requires salvage and relocation of impacted specimens from development areas to suitable locations within the Preserve.

Management Framework in *Chula Vista Subarea*

The Otay Ranch RMP provides the management framework for this species in Otay Ranch and the City Planning Component Framework Management Plan in Section 7.3 of the Subarea Plan provides the management framework for this species in the City Planning Component.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect this species from edge effects and unauthorized collection. Directives shall also include appropriate fire management/control practices to protect against a too frequent fire cycle.

Deinandra [Hemizonia] conjugens
Otay tarplant
Narrow Endemic Species

Habitat and Habitat Associations

Fractured clay soils in grasslands or sparsely vegetated Diegan coastal sage scrub are the preferred habitat of the Otay tarplant. Soils on the occupied sites near Sweetwater Reservoir are mapped as Diablo clay. Usually, there is little competition from woody shrubs where this annual grows.

Conservation in *Chula Vista Subarea*

As a Narrow Endemic Species, Otay tarplant within the City and outside the Development Area of Covered Projects will be subject to impact restrictions pursuant to Section 5.2.3 of this Subarea Plan and the HLIT Ordinance. In addition, Preserve design provides for conservation of the species at the following levels: (1) Otay Ranch – 100% conservation of major populations in the Otay River Valley and conservation of 70% overall, including populations in the Wolf Canyon area; (2) Rolling Hills Ranch: a) 19% conservation of the onsite population in the Preserve and 29% of the onsite population in the project open space for an overall onsite conservation rate of 48%; b) creation of a Tarplant Management Area (TMA) for Otay tarplant conserved in the project open space between Neighborhoods 9 and 10A and Neighborhoods 11 and 12; c) creation of a $100,000 non-wasting endowment to fund management in the TMA, including the possibility of restoration/revegetation activities within the TMA; d) off-site conservation of 5.8 acres of land containing approximately 15,080 Otay tarplants within the San Miguel Ranch Mitigation Bank and off-site conservation of 10 acres containing a minimum of 15,000 Otay tarplants; and e) preservation of an additional 1.9 acres of Otay tarplant within the San Miguel Ranch Mitigation Bank; (3) Bella Lago – 80% conservation of the onsite population

and off-site conservation of 14,630 square feet of land containing at least 210 Otay tarplants; (4) San Miguel Ranch – conservation of a minimum of 48 acres of Otay tarplant habitat and donation of $545,000 for a conservation management endowment for natural open space on the project, the majority of which funds will be directed at management efforts for the tarplant under the direction of the San Diego NWR. Additional known habitat in Bonita Meadows is presently outside of the *Chula Vista Subarea* within the County of San Diego. The Bonita Meadows Property has been acquired by CALTRANS for mitigation purposes.

Management Framework in *Chula Vista Subarea*

Implementation of area-specific management directives will provide for focused management of major populations of Otay tarplant. Management of the Otay Ranch populations will be provided through the RMP and future area-specific management directives. The City Planning Component Framework Management Planing Section 7.3 of the Subarea Plan provides the framework for this species in the City Planning Component. Rolling Hills Ranch and Bella Lago will have area-specific management directives developed and carried out as conditions of project approvals. Populations of Otay tarplant within the northern and western open space area on San Miguel Ranch will be managed by the San Diego NWR. Management of remaining populations in existing open space areas will be subject to additional management directives to be developed and implemented by the City. This includes open space areas in the Sunbow and Rancho Del Rey areas.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures for monitoring of populations, adaptive management of Preserve areas (taking into consideration the extreme population fluctuations from year to year), and measures protecting against detrimental edge effects to this species. Management pursuant to the Otay Ranch RMP will be required as a condition of project development.

Opuntia parryi* var. *serpentina
Snake cholla
Narrow Endemic Species

Habitat and Habitat Associations

Diegan sage scrub on xeric hillsides is the preferred habitat for this species. Soils include Huerhuero loam in Otay Valley.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 65% of maritime succulent scrub habitat. As a Narrow Endemic Species, any populations of snake cholla within the City will be subject to impact restrictions pursuant to Section 5.2.3 of this Subarea Plan and the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

The Otay Ranch GDP/SRP and RMP require protection of 80% of existing occurrences and transplantation of any impacted occurrences to restored areas of comparable size.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include specific measures to protect against detrimental edge effects to this species and translocation, where appropriate.

Euphydras editha quino
Quino checkerspot butterfly

The Quino checkerspot butterfly is not a Covered Species of the MSCP Subregional Plan. A separate and complete QCB Recovery Component will be implemented through this Subarea Plan and is discussed in Section 4.4.

Panoquina errans
Salt marsh skipper

Habitat and Habitat Associations

In San Diego County, salt marsh skipper is associated with coastal lagoons and salt marshes and is dependent upon salt grass (*Distichlis spicata*) , which is the single larval host plant. Nectar sources for the skipper include heliotrope (*Heliotropum curvassavicum*), salty susan (*Jaumea carnosa*), sea rocket (*Cakile maritima*), deerweed (*Lotus scoparius*) and frankenia (*Frankenia salina*).

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 100% of southern coastal salt marsh habitat in the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

Management will be provided through the maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR, as well as lighting and water quality controls for adjacent development, are required as part of the land use controls within the Chula Vista LCP to reduce edge effects from development outside the Preserve. Additional adjacency guidelines related to drainage, toxic substances, noise, lighting, and invasive species are provided in Section 7.5.2 of the Subarea Plan.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to control exotic weeds and invertebrate predators where appropriate and control public access to saltmarsh habitat.

Rallus longirostris levipes
Light-footed clapper rail

Habitat and Habitat Associations

The light-footed clapper rail occurs in the lower littoral zone of coastal salt marshes where cordgrass is present; however, all marsh habitats and adjacent uplands are used to some extent. It is also known to occur in freshwater marsh areas of the Sweetwater River, east and west of I-805.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 100% of southern coastal salt marsh habitat in the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

Management will be provided through the maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR, as well as lighting and water quality controls for adjacent development, are required as part of the land use controls within the Chula Vista LCP to reduce edge effects from development outside the Preserve. Additional adjacency guidelines related to drainage, toxic substances, noise, lighting, and invasive species are provided in Section 7.5.2 of this Subarea Plan.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include active management of Wetlands to ensure a healthy tidal salt marsh environment and specific measures to protect against detrimental edge effects to this species.

Charadrius alexandrinus nivosus
Western snowy plover

Habitat and Habitat Associations

The western snowy plover utilizes sandy beaches, dried mudflats, and saltpan within the MSCP study area. The species is known to nest in the D Street fill area, immediately north of the Sweetwater National Wildlife Refuge, within the portion of the Subarea that is within the jurisdiction of the San Diego Unified Port District.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 100% of southern coastal salt marsh habitat in the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

Management will be provided through the maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR, as well as lighting and water quality controls for adjacent development, are required as part of the land use controls within the Chula Vista LCP to reduce edge effects from development outside the

Preserve. Additional adjacency guidelines related to drainage, toxic substances, noise, lighting, and invasive species are provided in Section 7.5.2 of this Subarea Plan.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include protection of nesting sites from human disturbance during the reproductive season and specific measures to protect against detrimental edge effects to this species. Incidental Take (during the breeding season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the Wildlife Agencies.

Numenius americanus
Long-billed curlew

Habitat and Habitat Associations

Tidal mudflats and salt marshes are this species' preferred habitat however, it can also be found in the fall in agricultural fields. It is a migratory species that utilizes rangeland, cultivated land, tideflats, beaches, and salt marshes.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 100% of southern coastal salt marsh habitat in the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

Management will be provided through the maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR, as well as lighting and water quality controls for adjacent development, are required as part of the land use controls within the Chula Vista LCP to reduce edge effects from development outside the Preserve. Additional adjacency guidelines related to drainage, toxic substances, noise, lighting, and invasive species are provided in Section 7.5.2 of this Subarea Plan.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

None identified.

Sterna antillarum browni
California least tern

Habitat and Habitat Associations

The California least tern nests along the California coastline from April through August in open sand, salt pans, or dried mudflats near lagoons or estuaries. They forage primarily in nearshore ocean waters and in shallow estuaries and lagoons, mostly within two miles of the breeding area. Unfrequented sandy beaches close to estuaries and coastal embayments have traditionally served as nesting sites for the California least tern.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 100% of southern coastal salt marsh habitat in the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

Management will be provided through the maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR, as well as lighting and water quality controls for adjacent development, are required as part of the land use controls within the Chula Vista LCP to reduce edge effects from development outside the Preserve. Additional adjacency guidelines related to drainage, toxic substances, noise, lighting, and invasive species are provided in Section 7.5.2 of this Subarea Plan.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include protection of nesting sites from human disturbance during reproductive season, predator control, and specific measures to protect against detrimental edge effects to this species. Incidental Take (during the breeding season) associated with maintenance/removal of dikes/levees and/or beach maintenance/enhancement is not authorized except as specifically approved on a case-by-case basis by the Wildlife Agencies.

Speotyto cunicularia hypugaea
Burrowing owl

Habitat and Habitat Associations

The burrowing owl is typically found in open grasslands, prairies, and farmlands.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 29% of grassland habitat. In addition, through CEQA review the City will require surveys for the species, using appropriate protocols, in suitable habitat to determine if the species is present. If burrowing owls are detected in the Preserve, direct impacts will be avoided, and if found outside of the Preserve, impacts will be avoided to the greatest extent practicable. Impacted individuals will be relocated from impacted areas using passive and/or active methodologies that have been approved by the Wildlife Agencies.

Management Framework in *Chula Vista Subarea*

Habitat enhancement opportunities for the species within the Subarea occur in the Otay Ranch and Otay River Valley.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Management directives shall include identification of known historical and potential burrowing owl habitat and management for ground squirrels (the primary excavator of burrowing owl burrows). Enhancement measures may include creation of artificial burrows and vegetation management to enhance foraging habitat. Management plans

must also include monitoring of burrowing owl nest sites to determine use and nesting success, predator control, and establishing a 300-foot wide impact avoidance area (within the Preserve) around occupied burrows.

Campylorhynchus brunneicapillus couesi
Coastal cactus wren

Habitat and Habitat Associations

The cactus wren is found in coastal sage scrub and maritime succulent scrub habitats. Locally, the species inhabits coastal lowlands where they are restricted to native cactus thickets.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 65% of maritime succulent scrub habitat in the Subarea. In addition, translocation practices required for *Opuntia parryi* will further contribute to habitat enhancements for this species.

Management Framework in *Chula Vista Subarea*

The restoration of maritime succulent scrub habitat as specified in the Otay Ranch RMP and GDP shall occur at the specified 1:1 ratio.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include restoration of maritime succulent scrub habitat, including propagation of cactus patches, active/adaptive management of cactus wren habitat, monitoring of populations within preserves, and specific measures to reduce or eliminate detrimental edge effects. No clearing of occupied habitat may occur from February 15 through August 15.

Polioptila californica californica
Coastal California gnatcatcher

Habitat and Habitat Associations

The coastal California gnatcatcher is a strictly non-migratory passerine, which typically occurs in or near coastal sage scrub habitat and is most commonly found in moderately dense stands (40-70% cover) below 620 meters. Gnatcatchers use chaparral, grassland, and riparian habitats adjacent to sage scrub for normal dispersal.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 65% of coastal sage scrub habitat and 65% of maritime succulent scrub habitat in the Subarea.

Management Framework in *Chula Vista Subarea*

The Otay Ranch RMP provides for management and restoration of contiguous and/or interconnected patches of coastal sage scrub. No clearing of occupied habitat within 100 % conservation areas and 75-100% conservation areas may occur from February

15 through August 15.[1] Area-specific management directives must include specific adjacency guidelines related to noise (refer to Section 7.5.2 of this Subarea Plan).

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure. No clearing of occupied habitat in the MHPA may occur from March 1 through August 15.

Vireo bellii pusillus
Least Bell's vireo

Habitat and Habitat Associations

The least Bell's vireo is an obligate riparian breeder, typically inhabiting structurally diverse woodlands along watercourses. It occurs in a number of riparian habitat types, but selection of nesting sites does not appear to be strictly limited to riparian stands of a specific age. This vireo uses adjacent upland habitats, which may provide important supplemental food resources for the bird. Vireos also nest in adjacent upland habitat types. The understory of nesting areas frequently contains dense subshrub or shrub thickets dominated by sandbar willow, mule fat, young individuals of other willow species (e.g., arroyo or black willow), and one or more herbaceous species. Significant overstory species include mature arroyo willows, black willows, and cottonwood. Sites supporting vireos are wider and have a higher degree of vertical stratification with large amounts of tree and shrub cover, and comparatively little herbaceous cover or open area. Wide portions of the Otay River floodplain have potential for establishment of vireo habitat.

Conservation in *Chula Vista Subarea*

Conservation of 93% of Wetland habitat is provided through Preserve design in the Subarea. Of the 1,080 estimated acres of Wetland resources within the City, 1,005 acres are within the Preserve. Outside the Preserve, 22 acres are fully protected through existing permit mechanisms and 45 acres are located on properties owned by public agencies. Only 8 acres of Wetland resources are located in areas planned for development: approximately 2 acres of riparian–related Wetlands in Rolling Hills Ranch Subarea III, and an estimated 6 acres of combined marsh, disturbed Wetlands and riparian resources are located on the Midbayfront project site. Rolling Hills Ranch Subarea III is a Covered Project pursuant to this Subarea Plan. The Midbayfront project will be subject to the City's HLIT ordinance. Any proposed impacts to Wetlands in these areas will be subject to the Wetlands protection program detailed in Section 5.2.4 of this Subarea Plan and to Federal and State no-net-loss wetland policies. ASDMs must include specific adjacency guidelines related to noise (refer to Section 7.5.2 of this Subarea Plan).

[1] The City of Chula Vista utilizes a breeding season for the California gnatcatcher which commences two weeks prior to the California gnatcatcher breeding season identified in Table 3-5 of the MSCP Subregional Plan.

Management Framework in *Chula Vista Subarea*:

Management of Wetlands within the Preserve will include brown-headed cowbird control measures and specific measures to protect against detrimental edge effects.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Jurisdictions will require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with 404(b)(1) guidelines into the project. Participating jurisdiction's guidelines and ordinances and Federal and State wetland regulations will provide additional habitat protection resulting in no-net-loss of Wetlands. Jurisdiction must require new developments adjacent to Preserve areas that create conditions attractive to brown-headed cowbirds to monitor and control cowbirds. Area-specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. No clearing of occupied habitat may occur from March 15 to September 15.

Aimophila ruficeps canescens
California rufous-crowned sparrow

Habitat and Habitat Associations

This species is typically found in coastal sage scrub and chaparral habitats, within coastal sage scrub, and areas that are steep and rocky as well as open coastal sage scrub where there are scattered grasses.

Conservation in *Chula Vista Subarea*

Preserve design provides for conservation of 65% of coastal sage scrub and 65% of maritime succulent scrub.

Management Framework in *Chula Vista Subarea*

The Otay Ranch RMP provides for management and restoration of contiguous and/or interconnected patches of coastal sage scrub and maritime succulent scrub.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include maintenance of dynamic processes such as fire to perpetuate some open phases of coastal sage scrub with herbaceous components.

Passerculus sandwichensis beldingi
Belding's savannah sparrow

Habitat and Habitat Associations

This species is restricted to salt marshes around coastal lagoons that are dominated by pickleweed.

Conservation in *Chula Vista Subarea*

Conservation of 100% of southern coastal salt marsh habitat in the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

Management will be provided through the maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR, as well as lighting and water quality controls for adjacent development are required as part of the land use controls within the Chula Vista LCP to reduce edge effects from development outside the Preserve. Additional adjacency guidelines related to drainage, toxic substances, noise, lighting, and invasive species are provided in Section 7.5.2 of this Subarea Plan.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects to this species.

Passerculus sandwichensis rostratus
Large-billed savannah sparrow

Habitat and Habitat Associations

This species is a wintering species within the Subarea and is found in open fields and salt marshes.

Conservation in *Chula Vista Subarea*

This Subarea plan includes conservation of 100% of southern coastal salt marsh habitat in the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Management Framework in *Chula Vista Subarea*

Management will be provided through the maintenance of the Sweetwater Marsh NWR by the USFWS. Buffers outside the NWR, as well as lighting and water quality controls for adjacent development, are required as part of the land use controls within the Chula Vista LCP to reduce edge effects from development outside the Preserve. Additional adjacency guidelines related to drainage, toxic substances, noise, lighting, and invasive species are provided in Section 7.5.2 of this Subarea Plan.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects to this species.

4.2 Species with Known Occurrences or Suitable Habitat

This section discusses those species from the MSCP Subregional Plan Covered Species list that either have some occurrence data available within the Subarea or for which the Subarea contains suitable habitat or conditions for the species. These species would not be expected to be adequately conserved by the Subarea Plan alone, and the City's Take Authorization would be dependent upon other Subarea Plans in the MSCP Subregion to be maintained. However, it is important to note Chula Vista's contribution to the overall subregional conservation efforts for these species.

Acanthomintha ilicifolia
San Diego thorn-mint
Narrow Endemic Species

Habitat and Habitat Associations

San Diego thorn-mint occurs on clay soils in depressions on mesa and slopes, and is often associated with Vernal Pools.

Conservation of Known or Potential Habitat in the Subarea

The MSCP database does not contain point data for this species within the Subarea. CNDDB identifies several locations within the Subarea in Otay Ranch (Village 2 north of Poggi Canyon) and in the Bonita Meadows area. The population in Village 2 was surveyed but not located in spring 2000. The most significant population in the area is within the resort site of Otay Ranch which is outside the Subarea and will be preserved. As a Narrow Endemic Species, any populations of San Diego thorn-mint within the City will be subject to impact restrictions pursuant to Section 5.2.3 of this Subarea Plan and the HLIT Ordinance.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives and the SPA Plan for the Otay Lakes Resort area must include specific measures to protect against detrimental edge effects from the surrounding development.

Ambrosia pumila
San Diego ambrosia
Narrow Endemic Species

Habitat and Habitat Associations

San Diego ambrosia occurs in open habitats in coarse substrates near drainage and in upland areas on clay slopes or in the dry margins of Vernal Pools. This species occurs in a variety of associations that are dominated by sparse grasslands or marginal wetland habitats such as river terraces, pools and alkali playas.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. CNDDB identifies three locations within the Subarea: one in Greg Rogers Park,

another in Terra Nova Plaza (now developed) and the third in Rice Canyon. Potential habitat exists in Preserve areas in Otay Ranch, including the Otay River Valley. As a Narrow Endemic Species, populations of San Diego ambrosia within the City will be subject to impact restrictions pursuant to Section 5.2.3 of this Subarea Plan and the HLIT Ordinance.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include monitoring of transplanted populations and specific measures to protect against detrimental edge effects.

Brodiaea orcuttii
Orcutt's brodiaea
Narrow Endemic Species

Habitat and Habitat Associations

Orcutt's brodiaea occurs in clay soils in mesic native grasslands often associated with Vernal Pools.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. CNDDB identifies two locations in the J23-24 and J29-30 vernal pool complexes, which are outside of the Subarea boundary but within the Otay Ranch Planning Component. As a Narrow Endemic Species, any populations of Orcutt's brodiaea within the City will be subject to impact restrictions pursuant to Section 5.2.3 of this Subarea Plan and the HLIT Ordinance.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects.

Caulanthus stenocarpus* [subsumed into *Caulanthus heterophyllus var heterophyllus]
Slender-pod jewelflower

Habitat and Habitat Associations

Slender-pod jewelflower is found on dry slopes in burned or disturbed areas and is generally associated with chaparral habitats.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. There is a low likelihood of occurrence in the Subarea based on the known range of the species.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire.

Ericameria palmeri* ssp. *palmeri
Palmer's ericameria
Narrow Endemic Species

Habitat and Habitat Associations

Palmer's ericameria is associated with coastal sage scrub habitats.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. Preserve design provides for conservation of 65% of coastal sage scrub habitats. As a Narrow Endemic Species, any populations of Palmer's ericameria within the City will be subject to impact restrictions pursuant to Section 5.2.3 of this Subarea Plan and the HLIT Ordinance.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

No specific conditions for management are identified in Table 3-5 for this species.

Eryngium aristulatum* var. *parishii
San Diego button-celery

Habitat and Habitat Associations

San Diego button celery occurs only in Vernal Pools with clay soils.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. CNDDB identifies several locations in the J23-24, J29-30, and J31 North+ and South+ vernal pool complexes, which are outside of the Subarea boundary but within the Otay Ranch Planning Component. Potential vernal pool habitat for this species exists within the portion of the Otay Ranch that is within the Subarea. The Otay Ranch RMP provides for preservation of substantial vernal pool resources, and states a policy of preservation of 95% of vernal pool habitat, including a vernal pool Preserve consisting of over 400 acres. However, most of the vernal pool preservation areas are outside of the Subarea boundary. It should be noted that implementation of the Otay Ranch RMP will be carried out by both the City and the County of San Diego, ensuring that the goals and policies of the RMP are met and enforced regardless of political jurisdiction.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects.

Muilla clevelandii
San Diego goldenstar

Habitat and Habitat Associations

San Diego goldenstar is found on dry mesas and hillsides in chaparral and coastal sage scrub habitats.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*:

The MSCP database does not contain point data for this species within the Subarea: however, a new population has been identified in Rolling Hills Ranch and several individual plants have been identified in Bella Lago In addition, the USFWS has reported occurrences of the species on the inverted "L" parcel and within portions of San Miguel Ranch and Ames Ranch (outside of the Subarea) in the San Diego NWR (Draft Subarea Plan public review comments). CNDDB identifies a location in the vernal pool complexes on the Otay Mesa just outside the Subarea and within the Otay Ranch Preserve. Preserve design provides for conservation of this species.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include monitoring of the transplanted population(s) and specific measures to protect against detrimental edge effects to this species.

Navarretia fossalis
Spreading navarretia

Habitat and Habitat Associations

Known localities of this species are restricted to Vernal Pools and depressions that once supported Vernal Pools.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. Several known locations are in the vernal pool complexes on the Otay Mesa which are outside of the Subarea boundary but within the Otay Ranch Planning Component. Potential vernal pool habitat for this species exists within the portion of the Otay Ranch that is within the Subarea. The Otay Ranch RMP provides for preservation of substantial vernal pool resources, and states a policy of preservation of 95% of vernal pool habitat, including a vernal pool Preserve consisting of over 400 acres. However, most of the vernal pool preservation areas are outside of the Subarea boundary. It should be noted that implementation of the Otay Ranch RMP will be carried out by both the City and the County of San Diego, ensuring that the goals and policies of the RMP are met and enforced regardless of political jurisdiction.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects to this species and must incorporate measures to conserve

and maintain surrounding habitat for pollinators and as part of the hydrological system for the Vernal Pools.

Orcuttia californica
California Orcutt grass

Habitat and Habitat Associations

All known California Orcutt grass localities are restricted to Vernal Pools.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. Four of the seven extant San Diego County populations are on the Otay Mesa, which is outside of the Subarea boundary. Potential vernal pool habitat for this species exists within the portion of the Otay Ranch that is within the Subarea. The Otay Ranch RMP provides for preservation of substantial vernal pool resources, and states a policy of preservation of 95% of vernal pool habitat, including a vernal pool Preserve consisting of over 400 acres. However, most of the vernal pool preservation areas are outside of the Subarea boundary. It should be noted that implementation of the Otay Ranch RMP will be carried out by the City and the County of San Diego, ensuring that the goals and policies of the RMP are met and enforced regardless of political jurisdiction.

Relevant Management Requirements, (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects to this species and measures to maintain surrounding habitats for pollinators.

Pogogyne nudiuscula
Otay Mesa mint

Habitat and Habitat Associations

All known Otay Mesa mint localities are restricted to Vernal Pools.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. Several known locations are in the vernal pool complexes on the Otay Mesa, which are outside of the Subarea boundary but within the Otay Ranch Planning Component. Potential vernal pool habitat for this species exists within the portion of the Otay Ranch that is within the Subarea. The Otay Ranch RMP provides for preservation of substantial vernal pool resources, and states a policy of preservation of 95% of vernal pool habitat, including a vernal pool Preserve consisting of over 400 acres. However, most of the vernal pool preservation areas are outside of the Subarea boundary. It should be noted that implementation of the Otay Ranch RMP will be carried out by both the City and the County of San Diego, ensuring that the goals and policies of the RMP are met and enforced regardless of political jurisdiction.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects maintain surrounding habitat for pollinators and maintain vernal pool watershed areas.

Satureja chandleri
San Miguel savory

Habitat and Habitat Associations

San Miguel savory occurs in rocky canyons below 2,500 feet msl and is associated with coastal sage scrub, chaparral, cismontane woodlands, riparian woodlands, and valley and foothill grasslands.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. The species is known to exist in the San Miguel and Jamul Mountain areas.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to address the autecology and natural history of the species and to reduce the risk of catastrophic fire. Management measures to accomplish this may include prescribed fire.

Solanum tenuilobatum
Narrow-leaved nightshade

Habitat and Habitat Associations

Narrow-leaved nightshade occurs in dry open places in chaparral habitats.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

A known major population exists on the Inverted "L" property within Otay Ranch. This property has been divided into two parcels. The southern parcel is owned by USFWS and is being conserved. The northern parcel is owned by the Otay Water District and any impacts to sensitive species on this site will be subject to other permitting.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

None identified.

Branchinecta sandiegonensis
San Diego fairy shrimp

Habitat and Habitat Associations

Known to occur in Vernal Pools or depressions in vernal pool habitat areas.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. Several known locations are in the vernal pool complexes on the Otay Mesa, which are outside of the Subarea boundary but within the Otay Ranch Planning Component. Potential vernal pool habitat for this species exists within the portion of the Otay Ranch that is within the Subarea. The Otay Ranch RMP provides for preservation of substantial vernal pool resources, and states a policy of preservation of 95% of vernal pool habitat, including a vernal pool Preserve consisting of over 400 acres. However, most of the vernal pool preservation areas are outside of the Subarea boundary. It should be noted that implementation of the Otay Ranch RMP will be carried out by both the City and the County of San Diego, ensuring that the goals and policies of the RMP are met and enforced regardless of political jurisdiction.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects to this species.

Streptocephalus woottoni
Riverside fairy shrimp

Habitat and Habitat Associations

Known to occur in Vernal Pools or depressions in Vernal Pool habitat areas, including man-made depressions.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain point data for this species within the Subarea. Several known locations are in the vernal pool complexes on the Otay Mesa, which are outside of the Subarea boundary but within the Otay Ranch Planning Component. Potential vernal pool habitat for this species exists within the portion of the Otay Ranch that is within the Subarea. The Otay Ranch RMP provides for preservation of substantial vernal pool resources, and states a policy of preservation of 95% of vernal pool habitat, including a vernal pool Preserve consisting of over 400 acres. However, most of the vernal pool preservation areas are outside of the Subarea boundary. It should be noted that implementation of the Otay Ranch RMP will be carried out by both the City and the County of San Diego, ensuring that the goals and policies of the RMP are met and enforced regardless of political jurisdiction.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects to this species.

Bufo californicus
Arroyo toad

Habitat and Habitat Associations

Arroyo toads are found in foothill canyons and valleys where a river is bordered by low hills and the stream gradient is low. The species has extremely specialized riparian habitat requirements. Arroyo toads are known to either breed, forage, and/or aestivate in aquatic habitats, riparian, coastal sage scrub, oak, and chaparral habitats.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design within the Otay River valley provides for conservation of 98% of potentially suitable riparian habitat areas.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Areas-specific management directives must address the maintenance of arroyo toad through control of non-native predators; protection and maintenance of sufficient suitable low-gradient sandy stream habitat (including appropriate water quality) to meet breeding requirements; and preservation of sheltering and foraging habitat within one kilometer of occupied breeding habitat within the Preserve. Area-specific management directives must include measures to control human impacts to the species within the Preserve (e.g., public education and patrol). Take Authorization holders must minimize impacts to upland habitats that are within the MHPA and are within one kilometer of riparian habitat that supports or is likely to support arroyo toad.

Clemmys marmorata pallida
Southwestern pond turtle

Habitat and Habitat Associations

The southwestern pond turtle inhabits slow-moving permanent or intermittent streams, small ponds, small lakes, reservoirs and sewage treatment lagoons. Abundant logs, rocks, submerged vegetation, mud, undercut banks and ledges are necessary habitat components for cover as well as a water depth of greater than 6 feet.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

The MSCP database does not contain existing locations of the species in the Subarea. Preserve design provides for conservation of 98% of potentially suitable riparian habitats and freshwater marsh habitats.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Maintain and manage areas with 1,500 feet around known locations within the Preserve for the species. Within this impact avoidance area, human impacts will be minimized, non-native species detrimental to pond turtles will be controlled/removed, and habitat restoration/enhancement measures will be implemented.

Cnemidophorus hyperythrus beldingi
Orange-throated whiptail

Habitat and Habitat Associations

Habitat types for the orange-throated whiptail include chaparral, non-native grassland, coastal sage scrub and maritime succulent scrub, and juniper and oak woodland. This species is tied to perennial vegetation because its major food source, termites, requires perennial plants as a food base.

Conservation of Known or Potential Habitat in the Subarea

Preserve design in the Subarea provides for conservation of 65% of coastal sage scrub habitat and 65% of maritime succulent scrub with suitable vegetation associations.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must address edge effects.

Phrynosoma coronatum blainvillei
San Diego horned lizard

Habitat and Habitat Associations

San Diego horned lizard is found in a wide variety of vegetation types, including coastal sage scrub, maritime succulent scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Important habitat to the species in the Subarea includes coastal sage scrub and maritime succulent scrub which will be conserved at 65% and 65% respectively through Preserve design within the Subarea.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to maintain native ant species, discourage the Argentine ant, and protect against detrimental edge effects to this species.

Pelecanus occidentalis californicus
California brown pelican

Habitat and Habitat Associations

The California brown pelican requires a variety of marine-related habitat types.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Some of the habitat requirements of the species include southern coastal salt marsh, which is conserved at 100% in the subarea within the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Most of the important roosting and foraging habitat occurs on military lands and waters under Port Authority jurisdiction which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and Federal and State wetland regulations will provide additional habitat protection resulting in no-net-loss of Wetlands. This species is a common to very common non-breeding visitor which uses mud flats, piers and jetties to roost, and it forages primarily in coastal ocean waters and San Diego Bay.

Egretta rufescens
Reddish egret

Habitat and Habitat Associations

The reddish egret utilizes a variety of marine-related habitats, including southern coastal salt marsh.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Some of the habitat requirements of the species include southern coastal salt marsh, which is conserved at 100% in the Subarea within the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Additional important habitat occurs in waters under Port Authority and military jurisdiction which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and Federal and State wetland regulations will provide additional habitat protection resulting in no-net-loss of Wetlands. This species forages in shallow lagoons, mud flats, tidal channels, and salt marsh and is a rare visitor in fall and winter and a casual visitor in spring and summer but does not nest in San Diego County.

Plegadis chihi
White-faced ibis

Habitat and Habitat Associations

Migrant and wintering white-faced ibis may be found foraging in shallow lacustrine waters, marshes, ponds, lakes and rivers. Extensive marshes are required for nesting. The species prefers shallow, grassy marshes and nests in dense, fresh emergent wetland.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design provides for conservation of 98% of suitable wetland, marsh and flood control habitats.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to protect against detrimental edge effects to this species.

Branta canadensis
Canada goose

Habitat and Habitat Associations

Habitat used by this species in San Diego County includes open water areas and other wetland associations.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design in the Subarea includes conservation of 98% of habitats that are considered suitable for this species.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

None identified.

Haliaeetus leucocephalus
Bald eagle

Habitat and Habitat Associations

Bald eagles occur primarily in or near seacoasts, rivers, swamps, and large lakes. Bald eagles must have an adequate food base, perching areas and nesting sites. Perching sites need to be composed of large trees with heavy limbs or broken tops.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design provides for conservation of 96% of potential foraging habitat, including open water and freshwater marsh habitats.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

None identified.

Circus cyaneus
Northern harrier

Habitat and Habitat Associations

This species frequents open wetlands, wet and lightly grazed pastures, agricultural fields, mesic grasslands, meadows, and fresh and saltwater emergent wetlands.

Conservation of Known or Potential Habitat in the Subarea

Preserve design provides for conservation of 29% of grasslands, with additional Wetlands protection provided through the HLIT Ordinance.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must: (1) manage agricultural and disturbed lands (which become part of the Preserve) within four miles of nesting habitat to provide foraging habitat; (2) include an impact avoidance area (900 feet or maximum possible within the Preserve) around active nests; and (3) include measures for maintaining winter foraging habitat in Preserve areas in Proctor Valley, around Sweetwater Reservoir, San Miguel Ranch, Otay Ranch east of Wueste Road, Lake Hodges, and San Pasqual Valley. The preserve management coordination group shall coordinate efforts to manage for wintering northern harriers' foraging habitat within the MSCP Preserve. (It should be noted that these measures are provided for information purposes only as they apply to areas outside the Subarea, including areas within the Otay Ranch Planning Component.)

Accipiter cooperii
Cooper's hawk

Habitat and Habitat Associations

The Cooper's hawk breeds primarily in riparian areas and oak woodlands. Migrant and wintering birds may be found with regularity in developed areas.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design and Wetlands protection provide for conservation of potential foraging habitat.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include 300-foot impact avoidance areas around active nests and minimization of disturbance to oak woodlands and oak riparian forrests.

Buteo swainsoni
Swainson's hawk

Habitat and Habitat Associations

This species is a Spring/Fall migrant within the Subarea. Typical habitat for this species in the MSCP Subregion is grassland, agricultural fields and sparse shrub lands.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design in the Subarea provides for conservation of 29% of grassland and 1% of agricultural fields.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas.

Buteo regalis
Ferruginous hawk

Habitat and Habitat Associations

This migrant species requires large tracts of open grassland for foraging.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design in the Subarea provides for conservation of 29% of grassland and 1% of agricultural fields.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas.

Aquila chrysaetos
Golden eagle

Habitat and Habitat Associations

Range-wide, golden eagles occur in open country (e.g., tundra, open coniferous forests, desert and barren areas). Within southern California, the species favors grasslands, brushlands, deserts, oak savannas, open coniferous forests and montane valleys.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Suitable habitat within the Subarea includes grasslands and coastal sage scrub habitats, which are conserved through Preserve design at a combined level of 45%.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives for areas with nest sites must include measures to avoid human disturbance while the nest is active, including establishing a 4,000-foot disturbance avoidance area within Preserve lands. Area-specific management directives must also include monitoring of nest sites to determine use/success.

Falco peregrinus anatum
American peregrine falcon

Habitat and Habitat Associations

Peregrine falcons are found in a wide variety of open habitats. The species breeds mostly in woodlands, forest and coastal habitats. During migration, the peregrine falcon may be found near marshes, lakes, and ponds with high concentrations of waterfowl, shorebirds and other birds. The recovery plan specifies habitat requirements for the species.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Suitable habitat within the Subarea for certain life history activities of the species are conserved in the Subarea at the following levels: southern coastal salt marsh, 99%; natural flood channel, 92%; coastal sage scrub, 65%; and grassland, 29%.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

None identified.

Sterna elegans
Elegant tern

Habitat and Habitat Associations

In the MSCP Subregion, the species typically associates with beach and saltpan habitats and forages open water.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Suitable habitat for the species in the Subarea includes southern coastal salt marsh, which is conserved at a level of 100% in the Sweetwater Marsh NWR. Additional protection against direct impacts outside the Preserve will be provided through the HLIT Ordinance.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include protection of nesting sites from human disturbance during reproductive season and specific measures to protect against detrimental edge effects to this species. Incidental Take (during the breeding season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the Wildlife Agencies.

Empidonax traillii extimus
Southwestern willow flycatcher

Habitat and Habitat Associations

The southwestern willow flycatcher is restricted to riparian woodlands along streams and rivers with mature, dense stands of willows, cottonwoods, or smaller spring fed or boggy areas with willows or alders. Riparian habitat provides both breeding and foraging habitat for the species.

Conservation of Known or Potential Habitat in the Subarea

Preserve design in the Subarea provides for conservation of 100% of riparian scrub habitats that are considered suitable for the species.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the Federal 404(b)(l) guidelines into the project. Participating jurisdictions' guidelines and ordinances and Federal and State wetland

regulations will provide additional habitat protection resulting in no-net-loss of Wetlands. Management of Wetlands within the Preserve will include brown-headed cowbird control measures and specific measures to protect against detrimental edge effects. Area-specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur outside the nesting season, between May 1 and September 1.

Sialia mexicana
Western bluebird

Habitat and Habitat Associations

Western bluebird is typically associated with mature oak and riparian woodland habitats and grasslands.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design provides for conservation of 100% of riparian woodland habitats and 29% of grasslands.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

None identified.

Agelaius tricolor
Tricolored blackbird

Habitat and Habitat Associations

Tricolored blackbirds breed in large colonies and require nearby water, a suitable nesting substrate, and open range foraging habitat of natural grassland, woodland, or agricultural cropland.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Habitat that is considered to be suitable for the species in the Subarea includes grassland which is conserved at 29% and riparian scrub which is conserved at 99%.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Project approvals must require avoidance of active nesting areas during the breeding season. Area-specific management directives must include measures to avoid impacts to breeding colonies and specific measures to protect against detrimental edge effects to this species.

Taxidea taxus
American badger

Habitat and Habitat Associations

American Badgers are generally associated with dry, open, treeless regions, prairies, parklands, and cold desert areas. Habitat in the MSCP Subregion generally consists of open, grassy areas of coastal sage scrub.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Preserve design provides conservation for coastal sage scrub at a level of 65% and grassland at a level of 29%.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

Area-specific management directives must include measures to avoid direct human impacts to this species if it is present or likely to be present.

Felis concolor
Mountain lion

Habitat and Habitat Associations

Mountain lions use rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral as well as riparian areas that provide protective habitat connections for movement between fragmented core habitat areas.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Important habitat considerations in the Subarea include maintenance of habitat linkages. The major regional linkage in the Subarea is the Otay River Valley, which will be maintained and managed as part of the Preserve.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

None identified.

Odocoileus hemionus fuliginata
Southern mule deer

Habitat and Habitat Associations

The Southern mule deer requires significant areas of core habitat linked in a large regional system.

Conservation of Known or Potential Habitat in the *Chula Vista Subarea*

Area-specific management directives must include measures to avoid direct human impacts to this species if it is present or likely to be present.

Relevant Management Requirements (MSCP Subregional Plan Table 3-5)

None identified.

4.3 Species Not Likely to be Found in the *Chula Vista Subarea*

The following species are those that are covered under the MSCP Subregional Plan but for which suitable habitat conditions do not exist within the *Chula Vista Subarea*. An explanation of the rationale used for inclusion of each species on this list is provided below.

Agave shawii
Shaw's agave
Narrow Endemic Species

Shaw's agave is restricted to sandy coastal bluff areas in the northern coastal areas of the MSCP Subregion.

Aphanisma blitoides
Aphanisma

Aphanisma is restricted to sandy coastal bluff areas in the northern coastal areas of the MSCP Subregion.

Arctostaphylos glandulosa* var. *crassifolia
Del Mar manzanita

Del Mar manzanita is restricted to sandy coastal bluff areas in the northern coastal areas of the MSCP Subregion.

Arctostaphylos otayensis
Otay manzanita

Otay manzanita occurs on dry slopes at elevations between 1,800 and 5,000 feet msl and is generally associated with chaparral habitats. This species is not likely to occur within the elevation range found within the *Subarea.*

Astragalus tener* var. *titi
Coastal dunes milk vetch

Coastal dunes milk vetch is restricted to sandy beach strand areas which do not occur in the Subarea.

Baccharis vanessae
Encinitas baccharis
Narrow Endemic Species

Encinitas baccharis is not known or expected to occur in the southern portions of the MSCP Subregion.

Berberis nevinii
Nevin's barberry
Narrow Endemic Species

Nevin's barberry is found in coarse soils and rocky slopes in chaparral and gravelly wash margins in alluvial scrub. This species is associated with chaparral habitats and is generally found within the elevation range between 900 and 2,000 feet msl. It is not anticipated that this species exists or has potential habitat in the Subarea due to elevation restrictions in its range.

Brodiaea filifolia
Thread-leaved brodiaea
Narrow Endemic Species

The southernmost extent of the known range of thread-leaved brodiaea is just south of Lake Hodges and in Vista, San Marcos and Carlsbad. It is not anticipated that the species exists or has potential habitat in the Subarea.

Calamagrostis densa
Dense reed grass

Dense reed grass generally occurs at high elevations (3,000 to 4,000 feet msl) on dry slopes and is associated with chaparral habitats.

Calochortus dunnii
Dunn's mariposa lily
Narrow Endemic Species

Dunn's mariposa lily is found at elevations of 4,500 to 5,000 feet msl on dry slopes and is associated with chaparral habitats. It is not anticipated that this species exists in the Subarea due to elevation restrictions in its range.

Ceanothus cyaneus
Lakeside ceanothus
Narrow Endemic Species

The range of Lakeside ceanothus is limited to the Lakeside, Alpine, Ramona and El Capitan areas, and therefore this species is not expected in the Subarea.

Ceanothus verrucosus
Wart-stemmed ceanothus

Wart-stemmed ceanothus is a component of southern maritime chaparral habitat, which is generally confined to coastal areas near Del Mar. However, the USFWS has reported occurrences within the Subarea Plan, on the Inverted "L" Parcel portion of the San Diego NWR (Draft Subarea Plan public review comments).

Charadrius montanus
Mountain plover

Mountain plovers breed in dry, open, shortgrass prairies or grasslands and winter in shortgrass plains, plowed fields, open sagebrush areas and sandy deserts, and nests in high elevation grassland. No locations for this species were found within the Subarea.

Corethrogyne filaginifolia* var. *linifolia
Del Mar Mesa sand aster

Del Mar Mesa sand aster is confined to coastal bluff areas, which do not occur in the Subarea.

Cupressus forbesii
Tecate cypress

Tecate cypress is found on dry slopes at elevations of 1,500 to 5,000 feet msl. Known populations in the Otay Mountain area and the east end of the Otay River Valley occur within the Otay Ranch Planning Component but are not within the Subarea. It is not anticipated that this species exists in the Subarea due to elevation restrictions in its range.

Dudleya blochmaniae* ssp. *Brevifolia
Short-leaved dudleya
Narrow Endemic Species

Short-leaved dudleya is a coastal sage scrub species with a narrow range in the Del Mar and La Jolla areas. It is not anticipated that this species exists in the Subarea due to restrictions in its range.

Dudleya viscida
Sticky dudleya

Sticky dudleya is a coastal sage scrub species whose range is known to extend no further south than Escondido Creek. It is not anticipated that this species exists in the Subarea, due to restrictions in its range.

Erysimum ammophilum
Coast wallflower

Coast wallflower occurs in coastal strand areas and is not anticipated to occur in the Subarea due to the lack of suitable habitat.

Lepechinia cardiophylla
Heart-leaved pitcher sage

Heart-leaved pitcher sage occurs in closed-cone coniferous forest, chaparral and cismontane woodland at elevations of 1,600 to 4,000 feet msl. Because of elevation restrictions, this species is not anticipated to occur in the Subarea. No locations for this species are identified in the MSCP database or the CNDDB.

Lepechinia ganderi
Gander's pitcher sage
Narrow Endemic Species

Gander's pitcher sage occurs on dry slopes at elevations of 2,500 to 3,500 feet msl in chaparral habitats. Known populations on Otay and San Miguel mountain are outside of the Subarea. It is not anticipated that this species exists in the Subarea due to elevation restrictions in its range.

Lotus nuttallianus
Nuttall's lotus

Nuttall's lotus occurs in sandy soils, typically beach strand areas. The USFWS has reported occurrences within and adjacent to the Sweetwater NWR (Draft Subarea Plan public review comments).

***Monardella hypoleuca* ssp. *Lanata* Narrow Endemic Species**
Felt-leaved monardella

Felt-leaved monardella is generally restricted to San Diego County and occurs in chaparral. It is not anticipated to occur in the Subarea.

Monardella linoides* ssp. *viminea
Willowy monardella
Narrow Endemic Species

Willowy monardella occurs in rocky washes below 1,000 feet (msl) in coastal sage scrub and chaparral habitats.

The MSCP database does not contain point data for this species within the Subarea. CNDDB identifies locations outside of the Subarea to the southeast in the eastern Otay Mesa and Otay Mountain foothill areas.

Nolina interrata
Dehesa bear-grass

Dehesa bear-grass occurs on dry slopes in chaparral habitats and is not known or expected to occur in the Subarea.

Pinus torreyana
Torrey pine

Torrey pine is restricted in the MSCP Subregion to the Del Mar area and would not be expected to occur naturally in the Subarea.

Pogogyne abramsii
San Diego mesa mint

San Diego mesa mint is associated with Vernal Pools. The MSCP database does not contain point data for this species within the Subarea. It is not anticipated that the species would occur in the Subarea.

Rana aurora draytoni
California red-legged frog

The species is believed to be extirpated from the County of San Diego.

Rosa minutifolia
Small-leaved rose

The only known occurrence of small-leaved rose in the MSCP Subregion is outside of the Subarea.

Senecio ganderi
Gander's butterweed

Gander's butterweed occurs at elevations of 5,000 to 9,000 feet msl and is generally associated with montane or cismontane vegetation communities. It is not anticipated that this species exists in the Subarea due to elevation restrictions in its range.

Tetracoccus dioicus
Parry's tetracoccus

Parry's tetracoccus is restricted to gabbro soils and is generally found in chaparral at higher elevations. This species is not expected to occur in the Subarea due to lack of suitable conditions.

Mitoura thornei
Thorne's hairstreak butterfly

Thorne's hairstreak butterfly is dependent upon the Tecate cypress as its larval host food plant. This species is not anticipated to occur within the Subarea due to elevation restrictions in its range.

4.4 Quino Checkerspot Butterfly Recovery Component of Chula Vista Subarea Plan

The federally listed endangered QCB was not included as a Covered Species under the MSCP Subregional Plan. This Subarea Plan defines the actions which will be undertaken to provide for the long-term conservation and recovery of the species in the *Chula Vista Subarea.* Additionally, these actions are consistent with the Draft QCB Recovery Plan (USFWS 2001). The QCB is, therefore, included as a Chula Vista Covered Species and species adequately conserved under this Subarea Plan.

The QCB was federally listed as endangered on January 16, 1997 (62 FR 2313). The best available information indicates that it is highly endangered, as evidenced by the following:

- It was at such low densities prior to listing that it was thought to possibly be extinct (62 FR 2315);
- Populations have been reduced in number and size by more than 95% range-wide;
- It is known to undergo large population fluctuations related to weather (Murphy and White 1984); and
- Most current populations are threatened by ongoing development and invasion of non-native plant species (USFWS 2001).

Since the adoption of the MSCP Subregional Plan, QCB surveys have been undertaken throughout the Southern California range. A QCB Recovery Team was assembled by USFWS in September 1999 to analyze existing information and new data collected from more recent surveys. A QCB Draft Recovery Plan was issued by the USFWS in January 2001, and on February 7, 2001 the USFWS issued a proposed Critical Habitat designation for the species. On April 15, 2002, the final Critical Habitat designation was issued.

This section of the Subarea Plan presents a comprehensive, unified description of the suite of recovery actions the City intends to undertake in order to assist in the conservation and recovery of the Quino checkerspot butterfly. The recovery actions are based on the recommendations contained in the QCB Draft Recovery Plan (January 2001) prepared by USFWS in consultation with the Recovery Team. The Draft Recovery Plan presents the tasks necessary to ultimately reclassify the QCB to threatened and ensure the species' long-term conservation based on the best available scientific information and expert opinions. The recovery plan represents the best available direction on the actions required for the conservation and recovery of the species.

Upon issuance of Take authority to the City, Chula Vista intends to implement conservation measures for QCB that will provide for the long-term conservation and recovery of the species in its jurisdiction through the following actions:

1. Preserve the area within the final critical habitat designation for the QCB;

2. Maintain connectivity along key habitat linkages within the City's boundaries;
3. Manage the Preserve for the benefit of the QCB (along with other Covered Species);

4. Restore/enhance QCB habitat; and

5. Minimize project impacts to QCB.

This suite of recovery actions provides an extraordinary net biological benefit to the species when weighed against anticipated impacts. Background information for the QCB is provided in Appendix J of this Subarea Plan and includes information on physical characteristics and taxonomy, life history, metapopulation dynamics, and reasons for decline and current threats. This information is largely based on the Recovery Plan, which compiled the best available information about the species at the time of its preparation. For inclusion in Appendix J, the information in the Recovery Plan has been augmented with additional sources and updated information where appropriate. For more detailed information, the reader should refer to the Draft Recovery Plan.

4.4.1 Baseline Biological Information

The QCB is the southernmost subspecies of a widely distributed butterfly (*Euphydryas editha*) that ranges from British Columbia to northern Baja California, Mexico (Bauer 1975). It was formerly widespread in the coastal plains and inland valleys of southern California, including Los Angeles, Orange, Riverside, San Diego and San Bernardino counties, and northern Baja California, Mexico (Mattoni et al. 1997, USFWS database). As recently as the 1950s, collectors described the QCB as occurring on every coastal bluff, inland mesa top, and lower mountain slope in San Diego County and coastal northern Baja California (USFWS 2001). Throughout most of southern California, the native habitats of this butterfly have disappeared incrementally as development has progressed and undeveloped areas have been invaded by non-native plant species.

QCB show a preference for relatively open areas with cryptogamic crust and few vascular plants, surrounded by low-growing vegetation (Osborne and Redak 2000). Appropriate generalized habitat types include early and middle successional grasslands, open scrub communities, broken chaparral, and vernal pools (Murphy 1990). Within southwestern San Diego County, QCB have been observed north, east and south of Otay Lakes, the southwestern slope of Otay Mountain, on the San Diego National Wildlife Refuge northeast of Sweetwater Reservoir, along the mesa rim above the Otay River and at the Salt Creek confluence (USFWS 2001). The Otay Lakes area historically supported a large population that extended south to Otay Mesa and across the international border (Murphy and White 1984).

Normally, larvae consume the plant on which they hatch, and then migrate in search of new plants. Due to the limited ability of larvae to move among host plants, high local host density is necessary for larval survival (Osborne and Redak 2000). If larvae have accumulated sufficient reserves by the time their hostplants become inedible, they are able to enter diapause (USFWS 2001), a low-metabolic resting state that enables larvae to

survive for months during the summer without feeding. While in diapause, larvae are much less sensitive to climatic extremes. Larvae are able to re-enter diapause several times before maturing, which may extend their life cycle for several years (Singer and Ehrlich 1979). Because QCB larvae can re-enter diapause, it is possible that an adult flight period may only include a portion of the original larval population or may not occur at all in some occupied sites under adverse conditions. From the perspective of judging whether a population has been extirpated, it is important to know that a robust population may generate no adults at all under poor environmental conditions (USFWS 2001).

Adults are typically active during a four-to-six week flight period beginning between late February and May, depending on weather conditions (Emmel and Emmel 1973). Most *Euphydryas editha* subspecies exhibit generally sedentary behavior, with adults frequently remaining in the same habitat patch in which they developed as larvae (Ehrlich 1961, 1965; Boughton 1999, 2000). Data from mark-recapture studies indicate that long-distance dispersal (greater than 0.6 mile) in *Euphydryas editha* is rare (USFWS 2001). QCB generally fly close to the ground in a relatively slow, meandering flight pattern, and tend to avoid flying over trees, buildings, or other objects taller than six to eight feet. Their thermodynamic requirements and natural avoidance of shaded areas deters flight in densely wooded areas and other types of closed-canopy vegetation (USFWS 2001).

Murphy (1990) suggested that the human-induced decline in the distribution and abundance of the QCB is exacerbated by the complex "metapopulation dynamics" which affect the persistence of this butterfly. In metapopulation dynamics, butterflies exist in an assemblage of individual demographic units or populations that periodically exchange individuals. Metapopulation dynamics occur when (1) patches of habitat support local breeding populations; (2) no single population is large enough to ensure long-term survival; and (3) habitat patches are not too isolated to preclude simultaneous extinction of all populations (D. Murphy, pers.comm.). Metapopulation stability requires a minimum number of habitat patches connected by dispersal corridors (landscape connectivity) (USFWS 2001). Some habitat areas that would not be considered essential if geographically isolated are, in fact, essential when situated in locations where they facilitate continued connectivity between surrounding populations or play a significant role in maintaining metapopulation viability (66 FR 9475). Reserves should be designed to provide sufficient numbers of habitat patches such that (1) only a small number of habitat patches will likely be extirpated in a single year and (2) patches are close enough so that natural recolonization can occur at a rate sufficient to maintain a relatively constant number of patches occupied by larvae. Linkage areas must be free of dispersal barriers (artificial structures, dense stands of trees or tall shrubs) and mortality sinks (e.g., high-traffic roads). Habitat networks should also be buffered (i.e., embedded in natural areas as large as possible) to reduce indirect impacts of development and the need for future or ongoing restoration in occupied habitat.

QCB populations have been reduced in number and size by more than 95 percent range-wide primarily due to direct and indirect human impacts including habitat loss and fragmentation, invasion of non-native plant species, and disrupted fire regimes.

Conversion from native vegetation to non-native annual grassland will be the greatest threat to QCB reserves based on observations of the large-scale invasions throughout the range (Freudenberger et al. 1987, Minnich and Dezzani 1998, Stylinski and Allen 1999). The increased dominance of non-native species is reducing the abundance of QCB foodplants (Dodero pers. comm.), and habitat fragmentation exacerbates vegetation type conversion. Corridors of human activity through unfragmented natural areas such as unpaved roads, trails and pipelines are also conduits of non-native seed dispersal (Zink et al. 1995).

4.4.2 Assessment of Habitat Suitability within the City of *Chula Vista Subarea*

Historically, the QCB almost certainly occurred throughout the coastal plain and foothills of Chula Vista and would have occurred in highest densities around vernal pools. Much of the land within the City's Subarea has already been built out, and much of the remaining area (almost 7,000 acres) is either disturbed or agricultural land. Limited vernal pool complexes remain in the Subarea, and potential QCB habitat within the City has been degraded by previous agricultural activities and by invasion of non-native plant species. While there are some remaining areas of appropriate habitat and several QCB have been observed within the Subarea, the QCB is considered to have minimal potential for occurrence of large populations within the City in the absence of habitat restoration/enhancement.

The City and the Wildlife Agencies have worked together to assess the potential of extant habitat within the Subarea to support QCB. QCB populations fluctuate substantially from year to year. In addition, surveys are not available for all areas, and those surveys that are available contain differing amounts of detail. Where available, detailed habitat assessment and protocol survey information has informed the decision-making process and has been used to define potential impacts and anticipated conservation of QCB habitat.

Where detailed information was not available, analysis of anticipated impacts and conservation was based on a broader "landscape-level" habitat assessment. Actual QCB habitat utilization under current conditions is typically limited to small patches and depends heavily on habitat quality, particularly related to the extent of non-native plant invasion. As such, the total acreage of areas designated as "potential habitat" exceeds by orders of magnitude the areal extent of currently occupied habitat or areas that are likely to support QCB in the future without significant habitat restoration/enhancement.

A number of areas were immediately excluded from the habitat suitability analysis based either on regulatory factors or habitat type considerations and are graphically depicted on Figure 4-1. Only the portion of the City within the designated 2000 survey area was assessed for habitat potential. The total 2000 QCB survey area within the City equals approximately 14,174 acres. State Route 125, SDG&E rights-of-way and facilities, City of San Diego Cornerstone Lands, Otay Water District lands and the Otay Landfill were excluded because the City is not seeking Take Authorization in those areas under the Subarea Plan. These areas are shown in brown and labeled "Not a part" on Figure 4-1 and total approximately 1,619 acres. In addition, consistent with the remainder of the

Subarea Plan, the quarry totaling approximately 136 acres is considered a minor amendment area. It is designated "Minor Amendment" and is depicted in gray on Figure 4-1. Because they do not provide suitable habitat for QCB, developed, agricultural and riparian areas were excluded as potential habitat. Agricultural and riparian areas total approximately 9,522 acres; they are designated as "Excluded Areas" and shown in tan on Figure 4-1.

Non-excluded lands were assigned to habitat suitability Categories A through C and are also shown on Figure 4-1. These categories represent decreasing potential to support QCB, relative to other areas within the City only, not relative to the region as a whole.

Detailed 2001 habitat assessment and protocol survey information was available for Rolling Hills Ranch (HELIX 2001), Bella Lago (Klein-Edwards Professional Services 2001) and Otay Ranch Village 11 (Dudek 2001). Because 2001 was considered a good flight season, it is considered relatively unlikely (though not impossible) that butterflies will occur in areas with negative surveys in 2001 without habitat enhancement.

Four QCB were observed on Rolling Hills Ranch during 2001 protocol surveys. The approximate area believed to be occupied by these butterflies was drawn based on vegetation and topography. These areas were assigned to Category A. The area on Rolling Hills Ranch considered occupied did not extend as far to the north as to the south because the areas to the north lacked any host plants in 2001, and cryptogamic soils were more limited. The areas not considered occupied (and not excluded because of their agricultural use) were assigned to Category B because although no QCB were observed these areas were in close proximity to observed QCB locations. No butterflies were observed during protocol surveys on Bella Lago; therefore, that property also was assigned to Category B for the same reasons noted on Rolling Hills Ranch.

The remaining areas have been assigned habitat suitability categories based on habitat quality/connectivity and distance from known QCB locations. Areas surrounded by agriculture or developed land and narrow linear strips of vegetation surrounded by development on three sides were considered isolated. Based on edge effects and the likelihood of dispersing QCB to travel through the surrounding uses to encounter such an area, the likelihood of these areas supporting QCB was considered low. Similarly, areas known to consist of low quality habitat (i.e., high percentage of exotic plant species or subject to extensive human activity) are unlikely to support QCB and these areas were also placed in Category C. Proximity to known QCB locations was based on a 0.6-mile (1-kilometer) radius. This radius was selected because data from mark-recapture studies indicate that dispersal greater than this distance is rare in *Euphydryas editha quino* (USFWS 2001, page 20).

Category A includes:

- areas with a positive 2001 survey; and
- areas with no 2001 protocol survey, within 0.6 mile of a known QCB location.

Category B includes:

- areas with a negative 2001 protocol survey, within 0.6 mile of a known QCB location; and
- areas with no 2001 protocol survey, outside 0.6 mile of a known QCB location.

Category C

- includes isolated or low quality habitat.

Total area within the City was approximately 1,485 acres in Category A, 2,3981 acres in Category B and 633 acres for Category C (Figure 4-1).

4.4.3 Proposed Conservation Measures

Protection of suitable habitat patches and landscape connectivity are essential for preservation of the QCB. Approximately 62% (2,806 of 4,516 acres) of the identified potential habitat within the City will be conserved and managed as part of the Preserve. Furthermore, as described below, this area is primarily composed of areas with higher habitat suitability, includes all of the area within the final critical habitat for the species within the City, and maintains crucial linkages identified in the Recovery Plan. Given the extent of non-native plant invasion, long-term viability of the preserved habitat patches will depend heavily on habitat management, restoration and enhancement. The following subsections describe the relevant objectives identified in the Critical Habitat Designation and Draft Recovery Plan, followed by a description of how the Subarea Plan proposes to conserve the species within its jurisdiction.

4.4.3.1 Habitat Protection

The USFWS has designated critical habitat areas for the QCB (66 FR 9475). Critical habitat is defined in Section 3 of the ESA as (i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside of the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Critical habitat designations identify, to the extent known using the best scientific and commercial data available, habitat areas that provide essential life cycle needs of the species. The Critical Habitat Designation (CHD) was configured to provide for dispersal and migration corridors, as well as allowing room for population expansion. As described in the Federal Register notice, these areas "are designed to provide sufficient habitat to maintain self-sustaining populations of Quino checkerspot butterflies throughout its range." It should be noted, however, that the CHD does not necessarily capture all areas which may be important to the persistence and recovery of the species. The Subarea Plan considered this and has included additional lands outside of the CHD necessary for conservation of the QCB.

The habitat needs of the species are addressed in the Draft Recovery Plan. Protection of habitat within the distribution of described habitat complexes has been identified as Recovery Task 1.1 of the Draft Recovery Plan. Task 1.1.5 calls for protection and management of as much remaining undeveloped, suitable, and restorable linked habitat patches within and between the six habitat complexes of the Southwest San Diego Recovery Unit as possible. This includes protection and management of as much remaining undeveloped suitable and restorable habitat that is part of the known historic population distribution as possible in the Otay Lakes habitat complex, in a configuration designed to support a stable population.

Within the City of *Chula Vista Subarea*, the CHD extends onto lands held by independent agencies, Otay Ranch (and small areas immediately to the east), and small portions of Rolling Hills Ranch and Bella Lago (Figure 4-2). The final CHD within the City is conserved in the Preserve and seven of the eight known QCB locations in the City will be conserved.

Minor incursions into the CHD/Preserve will be made for Planned and Future Facilities, which are listed in Section 6.0 of the Chula Vista Subarea Plan. These facilities may result in impacts within the Preserve of up to 66 acres. Planned Facilities are estimated to impact four acres in Category A, nine acres in Category B and three acres in Category C for a total impact of 16 acres. This analysis conservatively assumed that all of the Future Facilities (up to 50 acres) would be constructed within Category A habitat.

In relation to the 3,021 acres of critical habitat within the Subarea, the total of up to approximately 66 acres (two percent) of potential incursion associated with all private and public projects in the City would not be considered substantial. However, all Planned and Future Facilities within the Preserve are subject to the Facilities Siting Criteria found in Section 6.3.3.4 of this Subarea Plan, and specific QCB impact avoidance and minimization measures found in Section 5.2.8.1 of this Subarea Plan in order to further minimize any potential direct impacts to QCB from these necessary public facilities.

Overall, conformance with the CHD would result in the preservation of 62% of the potential Category A, B and C QCB habitat in the City. While much of the proposed development would occur in areas with lower potential to support QCB, much of the proposed preservation would occur in areas with higher potential to support QCB. Table 4-4 identifies that 1,091 acres (73%) of Category A, 1,447 acres (60%) of Category B and 268 acres (42%) of Category C would be conserved. Expressed as a ratio, the conservation compared to impacts of Category A lands (those with the highest relative potential to support QCB) is 2.75:1; the ratio for Category B is 1.48:1.

Table 4-4: Quino Checkerspot Butterfly Habitat Conservation[1]

	Category A	Category B	Category C	Total
Potential Habitat Total by Category	1,485	2,298	633	4,516
Anticipated Impacts	394	951	365	1,710
Anticipated Conservation	1,091	1,447	268	2,806
Conservation Percentage	73 %	60 %	42 %	62 %

By conserving the final CHD within its jurisdiction, the suite of recovery actions proposed by the City will make a significant contribution to the persistence and recovery of the QCB. Furthermore, these lands form important links in all of the corridors identified in the Southwestern San Diego Recovery Unit in the Recovery Plan, as described below.

It should also be noted that, in addition to lands anticipated to be conveyed to the City as part of its Preserve, the USFWS has acquired lands within the City (on San Miguel Ranch and a portion of the Inverted "L" parcel) and is anticipated to acquire other lands within or adjacent to the City. The USFWS is responsible for managing these lands for the benefit of all listed species. These lands, therefore, provide additional benefit to the QCB within the Subarea and Chula Vista MSCP Planning Area without requiring management funding from the City.

4.4.3.2 Maintaining Connectivity

Protection of linkage areas between habitat patches is crucial to conserving existing metapopulations. This paragraph describes the tasks contained in the Draft Recovery Plan; Chula Vista's proposed maintenance of connectivity is described immediately below. Recovery Task 1.2 calls for the enhancement of landscape connectivity within and between the distribution of the habitat complexes. In order to enhance or restore landscape connectivity, those linkage areas that would most effectively connect occupied habitat patches are to be determined, and any barriers are to be removed. Conversely, vegetative barriers should be erected to prevent dispersal from habitat patches into adjacent high-traffic surface roads (Recovery Task 1.3). Specifically, maintenance and enhancement of connectivity in the Southwestern San Diego Recovery Unit is to include: (1) protection and management of landscape connectivity through Proctor Valley between the habitats in the San Diego NWR and the Otay Lakes area in the San Diego NWR habitat complex; (2) enhancement of landscape connectivity along the western and eastern margins of Otay Lake in the Otay Lakes habitat complex; and (3) enhancement of landscape connectivity between

[1] Contains impact associated with Planned and Future Facilities in the Preserve.

the north rim (above the Otay River) and western mesa top of Otay Mesa (Figure 4-3). This Subarea Plan contributes to the preservation and enhancement of portions of these three critical areas.

Habitat near the Sweetwater River (now in the SDNWR) was historically and appears to still be connected to Proctor Valley, San Miguel Mountain, and thus to currently occupied habitat around Otay Lakes. Lands not known to be occupied between the SDNWR and Otay Lakes are considered important because they may provide landscape connectivity between these two areas that allows for a low rate of genetic exchange and recolonization events and, therefore, the long-term stability of both (USFWS 2001). The habitat set aside across the northern portions of the Rolling Hills Ranch and Bella Lago projects provides an east-west linkage through a portion of this area. Importantly, the open space on these parcels is contiguous with a large core block of open space surrounding Mount Miguel to the north, and the open space set aside on Rolling Hills Ranch conserves a major ridgeline which is perpendicular to prevailing breezes, so ideal for QCB movement and hilltopping. The corridor across the northern portions of these properties connects potential habitat on portions of San Miguel Ranch being placed in the SDNWR and the Otay Water District Habitat Management Area to the partially USFWS-owned Inverted "L" parcel. This parcel is in turn connected to lands planned for conservation by the City and County of San Diego around Otay Lakes.

Landscape connectivity along the western margin of Otay Lake is constrained by the Olympic Training Center and other development, although some habitat remains along the Salt Creek drainage (USFWS 2001). The Subarea Plan will provide a linkage up Salt Creek on the Otay Ranch site north of the eastern portion of the University Site to open space edging the Lower Otay Lake just south of the Olympic Training Center (Figure 4-3). Other connectivity along the western edge of the reservoir would be provided through City of San Diego Cornerstone Lands, and would not be affected by this Subarea Plan. The Eastlake Vistas project, within Chula Vista, would provide additional open space along its eastern edge, immediately west of the Cornerstone Lands, widening the potential movement corridor.

Landscape connectivity on the mesas northeast of Brown Field and southwest of Lower Otay Lake has been reduced through historical disturbance, although no significant dispersal barriers exist. The Draft Recovery Plan asserts that landscape connectivity could be restored where distance between habitat patches is now too great to provide adequate linkage (USFWS 2001). The southern extent of Otay Ranch will be preserved, providing a linkage from Otay Mesa across the Otay River Valley to the southern end of Lower Otay Lake. The Preserve configuration also maintains existing connectivity along the Otay River Valley to western Otay Mesa.

By conserving landscape linkages in these three critical areas, the City's Subarea Plan will contribute to potential dispersal of the QCB, including genetic exchange between existing populations and potential recolonization of suitable, but currently unoccupied, habitat. This conservation is consistent with the Draft Recovery Plan. As described above, maintenance and enhancement of such linkages is critical to the stability of QCB metapopulations.

In addition to maintaining linkages where appropriate, the City will implement actions to prevent population sinks along high-traffic roads. This action is consistent with guidance contained in the Draft Recovery Plan. Selected roads that represent potential population sinks will be landscaped with shrubbery that will mature to at least five feet in height. Native shrubbery will be considered preferable, but non-invasive non-native landscaping will also be acceptable. This requirement is to apply to the following road segments: Main Street between Paseo Ranchero and Rock Mountain Road, La Media Road crossing the Otay River Valley, Rock Mountain Road crossing Wolf Canyon, Olympic Parkway crossing Salt Creek, and Proctor Valley Road crossing the southeast corner of Rolling Hills Ranch (Figure 4-3).

4.4.3.3 Preserve Management

Preserve management also is a critical component for conservation and recovery of the QCB. The second recovery criterion of the Draft Recovery Plan is to "permanently provide for and implement management of described habitat complexes to restore habitat quality, including maintenance of hostplant populations, maintenance of diverse nectar sources and pollinators, control of non-native plant invasion, and maintenance of internal landscape connectivity" (USFWS 2001 page 69). This paragraph describes the tasks contained in the Draft Recovery Plan; Chula Vista's proposed management program is described immediately below. Management measures are to include removal of cattle and phasing in of weed control where habitat is currently grazed (Recovery Task 1.2.2), reduction of off-road vehicle activity within the distribution of described habitat complexes (Recovery Task 1.4), management of activity on trails where habitat occurs in recreational use areas (Recovery Task 6), and reduction of fire frequency and illegal trash dumping in habitat areas (Recovery Task 8).

A number of general preserve management considerations outlined in this Subarea Plan (see Section 7.0) would provide benefit to the QCB Management activities will be initiated upon conveyance of lands to the Preserve in association with project development. Open space within the North City and Otay Ranch Preserve Management Areas (PMAs) is of relevance to QCB conservation. Framework Management Plans have been completed for both PMAs, and are incorporated into the Subarea Plan (refer to Section 7.0). The Framework Management Plan outline principal Preserve maintenance activities and requirements; provide specifications to limit "edge effects" and impacts from adjacent development; furnish a framework to address potential impacts to the

Preserve from invasive, exotic species; and create a blueprint for managing public access, trails and recreational uses within the Preserve. In addition to the Framework Management Plans, the Subarea Plan identifies compatible, conditionally compatible, and incompatible uses.

A number of uses and activities have been determined to be incompatible with the biological objectives of the MSCP Subregional Plan and therefore not allowed in the Preserve. Incompatible uses include agriculture and public off-highway recreational vehicle activity. Grazing is also considered incompatible unless it is deemed to have a neutral or positive impact on habitat values by the City with concurrence by the Wildlife Agencies.

Limited public access and passive recreation are permitted uses within the Preserve. Access points, new trails and facilities, and control of public access will be consistent with the City Planning Component Framework Management Plan (Section 7.5 of this Subarea Plan) or the Otay Ranch RMP (Section 7.6 of this Subarea Plan). Specifically, within the City Planning Component Framework Management Plan, trails, view overlooks and staging areas are to be located in the least sensitive areas of the Preserve, and trail widths are to be minimized to reduce impacts to critical resources. Similarly, the Otay Ranch RMP includes a requirement that trails be sited and designed to be compatible with resource protection. Throughout the City's Preserve, the appropriate managing entity is authorized to close selected areas of the Preserve to public use, temporarily or permanently, if public access has resulted in or is expected to result in significant negative impact to sensitive species. This may manifest itself in closure of occupied QCB habitat during the flight season (Section 6.2.1 of this Subarea Plan).

The City Planning Component Framework Management Plan establishes two levels of priority of management activities for the Preserve. Priority 1 measures include those management tasks that are necessary to ensure that the Covered Species are adequately protected. These management directives will be included in each area-specific management plan, which will be completed for each project prior to the issuance of a grading permit. Priority 1 activities which will benefit the QCB address litter and off-road vehicle activities, public access, trails and recreation (as described above) and invasive exotics control and removal. Litter and trash are to be removed on a regular basis. Posting signage, providing and maintaining trash cans and bins at trail access points, and imposing penalties for littering and dumping are intended to discourage such activities. Preserve areas are to be monitored to prevent illegal activities such as off-road vehicle use. No invasive non-native plant species are to be introduced into areas immediately adjacent to the Preserve. Invasive non-native plant species within the Preserve are to be monitored and removed as necessary, pursuant to the area-specific management directives.

The City Planning Component Framework Management Plan includes a requirement for dissemination of educational information to residents and landowners adjacent to and inside the Preserve to heighten environmental awareness of the Preserve's goals and purpose, and inform residents of adjacency issues. For new communities, this course of action will be required as part of SPA or Precise Plan approvals and will be implemented as Priority 1; elsewhere in the City, it will be implemented as Priority 2 as funding becomes available. This educational information will include information about the QCB, consistent with Recovery Task 4 (Priority 2) of the Draft Recovery Plan to initiate and implement an educational outreach program.

Responsibilities of the Otay Ranch Preserve Owner/Manager (refer to Subarea Plan Section 7.4 and Otay Ranch Resource Management Plan, City of Chula Vista 1993) include maintenance of existing high quality resources through the prevention of further disturbance, including controlling access to the Preserve, prohibiting off-road traffic, enforcing "no trespassing" rules, and curtailing activities that degrade resources, such as grazing, shooting and illegal dumping; implementation of maintenance activities including removal of debris and control of exotic plant species; and development of educational facilities and interpretive programs. As described in Section 5.2.5 of this Subarea Plan, prior to the issuance of Take Authorization, the City will adopt a Grazing Ordinance which codifies the Otay Ranch Range Management Plan in the Otay Ranch Planning Component. This ordinance includes restrictions on the location and timing of grazing on the Otay Ranch prior to conveyance to the Preserve, and would permit no grazing once lands are conveyed, unless it were deemed to have a neutral or positive impact on habitat values by the City, with concurrence by the Wildlife Agencies.

The above-described overall Preserve management requirements are anticipated to provide a benefit to the QCB. Importantly, the Preserve management framework established by the MSCP provides a structure along with specific funding to implement required Preserve management activities, including weed control. Because the administrative structure is already in place, additional funds allocated for restoration and enhancement activities to benefit the QCB will be allocated directly to field efforts (refer to Section 8.0 of the Subarea Plan for detailed information about Preserve funding).

4.4.3.4 Habitat Restoration/Enhancement

In addition to management of existing habitat, restoration and enhancement of potential habitat is critical to the persistence and recovery of the QCB. Recovery Task 1.2 also calls for the restoration of those habitat patches which would most effectively connect occupied habitat patches. This paragraph describes the tasks contained in the Draft Recovery Plan; Chula Vista's proposed restoration/enhancement program is described immediately below. According to the Recovery Plan, the ultimate goal of restoration efforts should be self-sustaining functional native ecosystems similar to those that historically supported QCB metapopulations. Efforts can range from a minimum, such as adding seed

of larval food and adult nectar plants to enhance existing resources, to extensive, such as re-establishing native plant communities in fallow agricultural fields. Site-specific ecosystem restoration planning should include data on natural vegetation community composition and physical habitat structure in the vicinity, as well as soils and associated plant and animal populations. Natural physical and biological attributes must be restored, including nectar plants, pollinators and appropriate larval diapause and pupation sites (USFWS 2001; Osborne and Redak 2000).

The City proposes to fund and implement a program which will provide restoration and/or enhancement ("restoration/enhancement") of QCB habitat. This program will be in addition to any project-specific restoration required for temporary impacts. As discussed in detail below, restoration/enhancement will include both focused removal of non-native plant species and re-establishment of native annuals that serve as nectar sources and larval host plants. In consultation with a QCB Scientific Advisory Committee (QSAC), the City Habitat Manager will determine on an annual basis how best to apply the available funds in accordance with an adaptive management program. The QCB Scientific Advisory Committee will consist of qualified biologists from USFWS and CDFG (one from each agency) and two to three representatives selected by the City from the academic and/or consulting arena with experience in QCB and/or habitat management issues. Additional information about the QSAC is contained in Appendix J.

(1) Site Selection

Specific locations for habitat restoration/enhancement will be selected by the City Habitat Manager in consultation with the QSAC, upon conveyance of Preserve lands to the City (refer to Appendix J for additional information about the timing of the QCB habitat restoration/enhancement program). This plan establishes criteria for the selection process, aimed at ensuring that the benefit of the restoration/enhancement program is maximized. Restoration/ enhancement activities will not be undertaken in the vicinity of Planned or Future Facilities. The best scientific information currently available indicates that the following criteria should be considered in the selection of restoration/enhancement sites:

- Connect to or enhance known populations;
- Consist predominantly of native habitat with a low to moderate non-native component;
- Support other Covered Species;
- Have mima mound topography (if available); and

- Are defensible from re-invasion by non-native plant species.

The above criteria may be modified without a plan amendment as additional information from area-specific enhancement experience or general QCB research becomes available. Under these criteria, areas that would expand or provide "stepping-stones" between known populations would be prioritized. Restoration/enhancement areas would typically be located in areas identified as Category A habitat, as such areas are within 0.6 mile of a known QCB location and provide habitat generally considered to be better quality within the context of the City.

In order to be most cost-effective, the restoration/enhancement program would not focus on restoration/enhancement of areas that have been completely overtaken by invasive non-native species and would attempt to use areas that are appropriate for QCB restoration/enhancement but may also support other Covered Species as well. One of the most significant threats to the QCB is the invasion of non-native species into otherwise suitable habitats; this program would address this issue by ensuring that lands in the Preserve maintain or improve suitability for occupation. Several sensitive, covered plant species provide indicators of areas that may be suitable for the QCB. In addition, focusing on such areas allows the City to maximize the number of sensitive species that benefit from the limited public funds available for species conservation.

Anecdotal accounts indicate that areas with mima mound topography historically supported the highest densities of QCB. Areas with deep soils may have been subject to greater weed invasion because of their fertility, while areas with less fertile soil support remnant QCB populations. Areas that previously supported the most productive habitat for the species are likely to do so again given appropriate restoration/enhancement efforts.

As described in Appendix II, Habitat Restoration Methods, of the Draft Recovery Plan, non-native plant removal strategies should Take advantage of habitat breaks (e.g., large shrub patches, canyon edges, rock outcrops, roads) to serve as buffer zones from adjacent areas that are dominated by non-native plants. Again, this will allow the City Habitat Manager to use available funds most efficiently.

(2) Habitat Restoration/Enhancement Program

Three different levels (high, moderate and low intensity) of restoration/enhancement may occur within the Preserve. High-intensity restoration/enhancement involves de-thatching, weeding and spraying, as well as planting/relocation of native plant species, annually over a five-year period. The high intensity restoration/enhancement program (described below) is based on the De-thatch and Repeat Spray Method developed by Recon and

outlined in Appendix II of the Draft Recovery Plan, as slightly modified through subsequent personal communication. It would be employed in areas that have significant numbers of native plant species present but contain moderate to high levels of non-native plants. The moderate and low intensity programs would be used for areas that have significant numbers of native plant species present, but contain moderate or low levels of non-native plants. The moderate and low intensity program costs were developed specifically to address the individual requirements of a QCB program in the City. The moderate-intensity restoration/enhancement would occur annually over a five-year period with perpetual maintenance commencing in year six, while the low-intensity restoration/enhancement would occur annually over a four-year period with perpetual maintenance commencing in year five.

Appropriate timing of non-native plant removal should result in decreasing effort over a period of years. All areas that have been subject to restoration/enhancement will eventually be included as areas targeted for focused weeding on an appropriate rotating basis (i.e., every two to six years as needed). The following outlines the high-intensity restoration/enhancement program, representing the maximum amount of effort that is expected to be undertaken. This methodology may be modified or scaled back to suit the conditions at the selected site at the discretion of the QSAC.

Thick thatch associated with dead mustard or annual grasses can prevent native species from germinating and/or competing successfully for light and space with non-natives. In areas with this problem, dethatching will be used to enhance the areas. This will include removal of dead plant thatch using hand tools, and "weed eaters," and return visits for spraying with glyphosate. Timing of non-native plant control efforts is crucial to success. Non-native plants will be killed prior to seed set, so that removal effort and cost will decrease over time. Another crucial component of the non-native plant removal method described below is that workers must be trained to distinguish between native and non-native plants for restoration/enhancement to be successful.

The high-intensity restoration/enhancement program is as follows:

(a) Cut thatch and dead non-native plants with "weedeaters." This cutting can be done during the summer or early fall;

(b) Rake up and collect non-native plant thatch;

(c) Remove thatch from site and dispose of it in dumpsters, a landfill, or an area where it can be composted nearby to reduce disposal costs;

(d) Return to site and spray Roundup (or more selective herbicide, or selective weed-whacking) on non-native plant seedlings after sufficient rains have fallen in winter and spring;

(e) Repeat spraying (or selective weed-whacking) as necessary to prevent seed set. Other options include the use of pre-emergent herbicide prior to the first significant rain; and

(f) Repeat spraying (or selective weed-whacking) as necessary to maintain non-native plant density to a low level.

Frequent site visits are necessary during the growing season to assess non-native plant removal efforts and to determine whether changes are needed in the strategy being used or the intensity of non-native plant removal efforts. In particular, the non-native plant removal process must be carefully monitored to ensure that new non-native plant species do not flourish as the formerly dominant non-native species are removed. Up to five herbicide (or weed-eating) applications per season may initially be required. The amount of spray will be reduced as the season progresses and fewer non-native plants are present. After the first two years, weeding requirements decrease each year if the spraying program is timed to kill non-native plants before they set seed. Removal of non-native plants by hand may be required around small populations of herbaceous natives.

Populations of native annuals (larval host plants and nectar resources) may be enhanced or re-established in and between existing habitat patches by hand seeding. According to the Draft Recovery Plan, restoration/enhancement plantings should include nectar-producing plant species with overlapping flowering periods that extend throughout the typical southern California growing season. Seeds of native plant species used in each restoration/enhancement project should be collected within five miles of the site, or as close as possible within the same general climate zone. To ensure that adequate seed is available, seed bulking (growing seed in cultivation to increase the amount of seeds) of annuals, including plantago and nectar plants, will be necessary. This seed bulking should be done at growing areas that can provide reproductive isolation from related plants from different regions. The Otay RMP (City of Chula Vista and County of San Diego 1993) calls for the construction of a native plant nursery and/or botanic garden to be used for public education and restoration/enhancement activities. This could provide an appropriate place to accomplish seed bulking for QCB habitat restoration/enhancement activities in the Otay Ranch area.

In order to support a diverse assemblage of potential pollinators and native plant species, the Recovery Plan calls for areas of open ground within associated native plant communities to be restored to support ground nesting bees and other invertebrates. The goal of having open ground for pollinators

is compatible with QCB restoration/enhancement efforts because QCB larval food and adult nectar plants require open ground for successful reproduction and long-term persistence. Brush piles, scattered sticks, branches and rock cobbles can be brought to the restoration/enhancement site to increase the available cover for many animals, and will provide potential diapause and pupation sites for QCB.

Periodic maintenance of restoration/enhancement areas will likely be required at low levels in perpetuity. Adaptive management strategies would be used to address unanticipated circumstances. Maintenance needs are likely to include control of non-native species and measures to slow or reverse plant community succession (increased shrub density). Until the appropriate QCB larval food and adult nectar plants are fully established, monitoring and control of aggressive native species may be required, so that they do not dominate the vegetation and exclude QCB food plants through competition.

(3) Implementation

The City of Chula Vista QCB Habitat Restoration/Enhancement Program will provide 50 acres of QCB habitat. The first year of the program will be solely devoted to establishing the program, collecting and propagating the seed of larval host and nectar resource plants, and determining the areas to be restored/enhanced. The restoration/enhancement will begin in year two and end in approximately year ten. As each acre completes the five-year (moderate and high intensity) or four-year (low-intensity) restoration/ enhancement program, it will enter a program of perpetual maintenance.

Additional information about the timing of the QCB habitat restoration/ enhancement program and the relationship of impacts to restoration/ enhancement efforts is contained in Appendix J of this Subarea Plan.

(4) Funding

The QCB habitat restoration/enhancement program will be funded through the Preserve Management Enhancement Fund (PMEF), a non-wasting endowment program. The PMEF program is anticipated over time to generate a perpetual annual budget of $50,000 to over $92,000 (2002 dollars), as endowment contributions are made by the City in association with construction of public infrastructure (refer to Section 8.3.2.4 for a more detailed discussion of the PMEF). Priority for PMEF expenditures will be given first to the QCB habitat restoration/enhancement program. Irrespective of funding sources or anything to the contrary, coverage for the QCB is based on the habitat conservation and Preserve management provided through this Subarea Plan and 50 acres of QCB restoration/enhancement that collectively comprise the Chula Vista QCB program. Additional information about the funding of the QCB habitat

restoration/enhancement program is contained in Section 8.4 of this Subarea Plan.

(5) Monitoring

Consistent with USFWS Five-Point Policy (65 FR 35242) and the MSCP Subregional Plan, the City will monitor the effectiveness of QCB habitat restoration/enhancement efforts and will conduct limited annual census monitoring. Complete information about the QCB monitoring program is provided in Section 7.4.3.2 of this Subarea Plan.

4.4.4 Impact Minimization

The City has undertaken, or has committed to undertake upon issuance of Take authority, a number of measures to minimize potential impacts to the QCB. The Draft Recovery Plan identifies carbon dioxide as a potential threat to QCB relative to plant and insect development as well as global climate change. The City adopted a Carbon Dioxide Reduction Plan on November 14, 2000. This plan includes a number of completed or ongoing measures, such as purchase of alternative fuel vehicles, green power public education program, traffic signal and system upgrades, and municipal building upgrades and trip reduction.

Subsequent to conditional adoption of the Chula Vista MSCP Subarea Plan by the City Council in October 2000, the City immediately initiated preparation and processing of amendments to the City's Grading Ordinance for MSCP implementation. The ordinance amendments include regulations on clearing and grubbing of Sensitive Biological Resources to ensure compliance with the Chula Vista MSCP Subarea Plan. Specifically, impacts associated with Planned and Future Facilities within the Preserve and other development outside of the Preserve will be minimized according to the measures described below.

4.4.4.1 Infrastructure in the Preserve

Planned and Future Facilities within the Preserve will be subject to the Facilities Siting Criteria contained in Section 6.3.3.4 of this Subarea Plan, and to specific QCB impact avoidance and minimization measures found in Section 5.2.8.1 of this Subarea Plan. Impacts to QCB habitat in the Preserve will be minimized while allowing for construction of Planned and Future Facilities as provided for in this Subarea Plan. To the extent practicable as determined by the City, impacts to occupied QCB habitat will be avoided during the planning, design and construction of Planned and/or Future Facilities. The physical and engineering requirements of new roads and infrastructure shall be considered during the siting procedure. Road and/or right-of-way width may be narrowed from the existing City design and engineering standards where necessary to avoid impacts to occupied QCB habitat, to the maximum extent practicable.

Although siting facilities along existing dirt roadways or disturbed areas is typically considered preferable to siting in vegetated areas, the edges of such areas are frequently the locations of QCB observations. To the extent that such areas in a given project footprint are demonstrated to be occupied by QCB, avoidance of QCB will be prioritized over avoidance of vegetation not occupied by the QCB or other Covered Species. The prioritization for avoidance of QCB versus other Covered Species will be determined in consultation with the Wildlife Agencies on a project-specific basis. Unoccupied, but potentially suitable, QCB habitat should also be avoided if possible; areas with higher likelihood of supporting QCB represent a higher priority for avoidance. If grading must occur in areas within or adjacent to occupied habitat, a number of minimization measures will apply.

4.4.4.2 Development Projects

No development projects outside the Preserve will be subject to avoidance requirements. Those development projects grading in Non-Preserve Habitat-Category A areas after 2002 will, however, be required to comply with construction monitoring measures specified in Section 5.2.8.2; no such requirements will apply to other development areas.

As a means of reducing impacts to potential QCB habitat and other sensitive habitats from development allowed by the Subarea Plan, the City will continue its practice of requiring soil, seed and plant salvage on a project-by-project basis (Section 5.2.7 of this Subarea Plan). Project review and CEQA analysis will identify appropriate salvage opportunities. Mitigation measures and conditions of project approval would specify the soils, seed and plant material to be salvaged, identify the procedures for salvage, and specify locations and time frames for use of material, as appropriate.

4.4.5 Rationale for Identifying the Species as Covered

The conservation, restoration/enhancement and management program proposed for the QCB in the City's Subarea provides an extraordinary biological benefit to the species when weighed against anticipated impacts. As described above, there is minimal potential for QCB to occur in significant numbers in the *Chula Vista Subarea* in the absence of habitat restoration/enhancement efforts. In fact, it is anticipated that without effective management, especially weed control, habitat quality and the potential for long-term persistence of the QCB in the City will continue to decline. Any impacts associated with development within the City are therefore anticipated to be minimal. Conversely, the conservation and the QCB restoration/enhancement program proposed to be implemented through this Subarea Plan is anticipated to create extraordinary benefit to the QCB recovery program.

The City is proposing to provide for the long-term conservation and recovery of the species by implementing the actions specified in this Subarea Plan, and summarized below. These actions are consistent with the Draft QCB Recovery Plan.

1. Protection of the area within the critical habitat designation, as well as significant conservation outside of, but connected to, critical habitat, which will also enhance long-term conservation of QCB;

2. Preservation of 7 of the 8 documented QCB locations in the City;

3. Maintenance of a potential landscape linkage along the western edge of Lower Otay Lake, per Priority 1 Recommendation 1.1.5.2 of the Recovery Plan;

4. Maintenance of connectivity through the northeastern portion of the City from SDNWR to Otay Lakes, per Priority 1 Recommendation 1.1.5.1 of the Recovery Plan;

5. Minimization of impacts resulting from Planned and Future Facilities in the Preserve, and from private development projects adjacent to the Preserve, including monitoring and salvage of habitat constituents;

6. Re-establishment of viable habitat that maintains connectivity with existing populations, per Priority 1 Recommendation 1.1.5.3 of the Recovery Plan; and

7. Management of Preserve areas for the QCB and other Covered Species.

Through implementation of the Subarea Plan, seven of the eight QCB observation locations in the Subarea will be conserved. All eight known locations of QCB within the Subarea were single individual sightings. None of the eight locations are considered critical populations, thus, no critical populations of QCB will be impacted by Take Authorization. The seven conserved known QCB locations are within the boundaries of the Preserve. Planned Facilities that must cross the Preserve are located to avoid impacts to all seven known QCB locations (see Figure 4-4). In addition, all Planned and Future Facilities within the Preserve will be required to conduct QCB surveys based on the most recent protocols adopted by the Wildlife Agencies and demonstrate impact avoidance/minimization as described in Section 4.4.3 of this Subarea Plan.

Pursuant to the Subarea Plan, overall, 1.61 acres of potential QCB habitat will be protected for each one acre of potential QCB habitat impacted. Impacts are predominantly in areas in Category B and C, while conservation predominantly occurs in Categories A and B. For Category A habitat, that with the highest likelihood to support QCB, the ratio of habitat preserved to impacted is 2.75:1.

Areas identified for preservation are also in proximity to Preserve areas (including those of other high-potential restoration/enhancement) under the control of others, including the USFWS, City of San Diego, County of San Diego, and Otay Water District. The

efforts proposed by this Subarea Plan could therefore offer a springboard for efforts directed by these multiple jurisdictions at recovery of the QCB, providing a substantially increased benefit. Regardless of any potential future efforts by others, the City is proposing a suite of actions designed to effectively implement the portion of the Recovery Plan relevant to its jurisdiction.

In addition to the conservation of a majority of the habitat in the City with potential to support QCB, the City proposes a restoration/enhancement program designed to result in additional high-quality QCB breeding and dispersal habitat. Such activities would be directed to areas that provide for long-term viability of the species through connectivity with and between existing populations. Both habitat conveyance and restoration/enhancement of potential QCB habitat would occur in advance of or simultaneous with anticipated impacts to Category A potential QCB habitat, and all QCB enhancement/restoration will be managed through the Chula Vista management program described in Sections 4.4.2.3 and 7.0 of this Subarea Plan.

Through conservation, avoidance and minimization and the enhancement/restoration program, in comparison with the minimal anticipated potential impacts to QCB, this Subarea Plan provides an extraordinary net biological benefit, contributing to the long-term persistence and recovery of the subspecies.